SEPTEMBER 23, 1933

Railway Age

Founded In 1856

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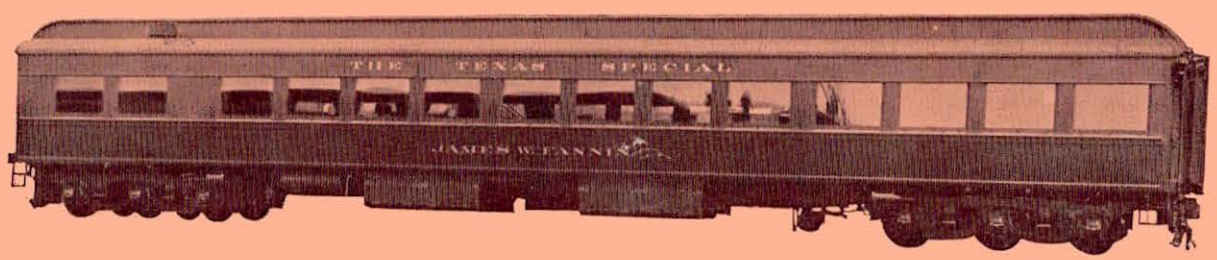
"RAILWAY school taxes were sufficient to pay the annual expenses of 98,389 pupils in the primary and secondary schools in the State of Illinois, 86,452 pupils in Michigan, 80,047 pupils in Ohio, 79,210 pupils in New Jersey, 70,956 pupils in Oklahoma, 70,384 pupils in Pennsylvania, 70,087 pupils in Virginia, 68,045 pupils in West Virginia, 65,909 pupils in Kentucky, 60,492 pupils in Arkansas, 59,290 pupils in Indiana, 54,736 pupils in New York, and 51,648 pupils in Kansas." *An excerpt from an editorial in this issue entitled "The Railways as Educators".*

Utmost Safety and Travel Comfort

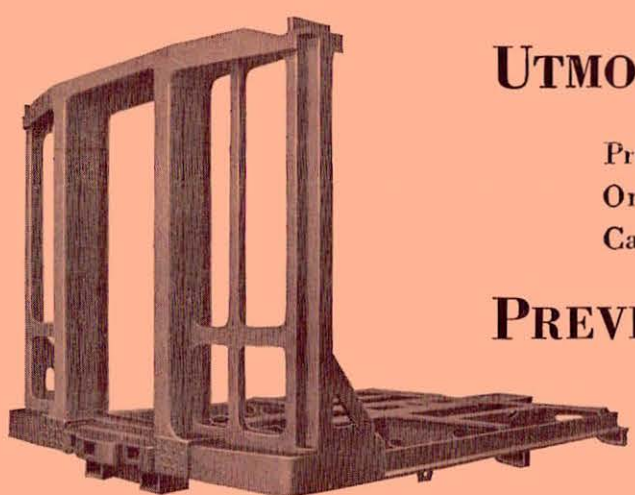
BUILT INTO

M-K-T Katy Lines

MODERN NEW LOUNGE CARS



Built by American Car & Fdry. Company St. Charles Plant



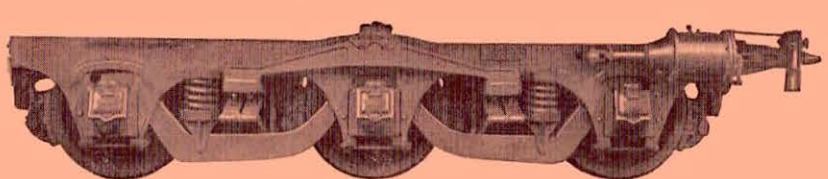
Platform and Up-Right End Frame as applied to M-K-T lounge cars

UTMOST SAFETY AND STRENGTH

Provided by Commonwealth Cast Steel One-Piece Blind-End Type Platform Castings and Upright End Frame Castings

PREVENT TELESCOPING OF CAR

Commonwealth Passenger Trucks for Smooth Riding and Low Maintenance Costs



Commonwealth 6-Wheel Truck with Unit Brake Cylinder Mounted on Truck — an Innovation

GENERAL STEEL CASTINGS CORPORATION

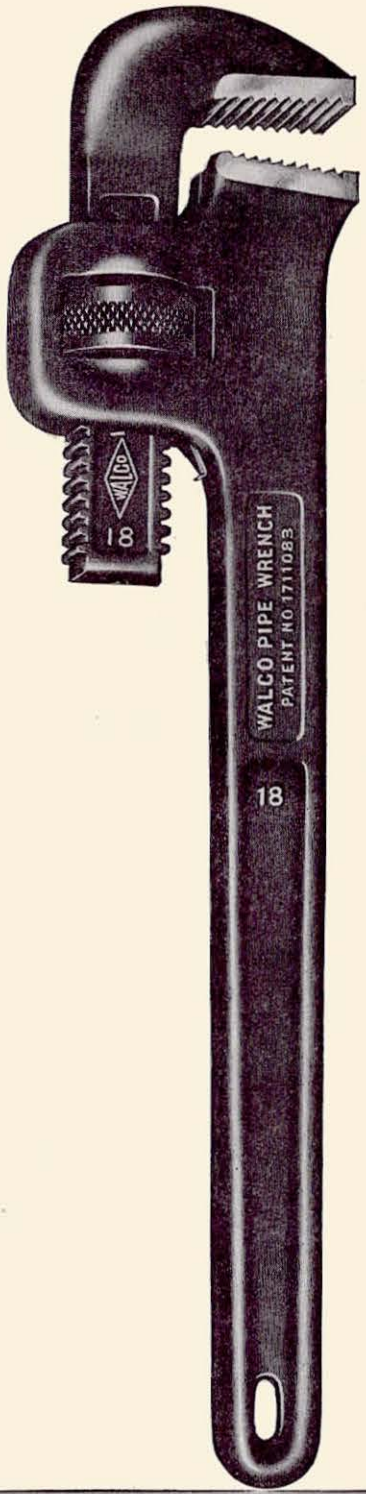
COMMONWEALTH PRODUCTS

EDDYSTONE, PA. GRANITE CITY, ILL.

Published weekly by Simmons-Boardman Publishing Company, 1309 Noble Street, Philadelphia, Pa. Entered as second class matter. January 4, 1933, at the Post Office at Philadelphia, Pa., under the act of March 3, 1879.

Safety

Even a bruised finger should be guarded against—and a broken pipe wrench may mean broken bones.



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guards against accidents and should be part of your Safety Program because

It's Stronger

—in fact, the strongest pipe wrench made. All forged steel, heat treated. Housing forged integral with bar. Just four parts.

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backed by 91 years continuous service to industry in the production of valves, fittings and tools

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PULLMAN CAR AND MANUFACTURING CORPORATION
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announces
creation of a Research Department
for development of transportation equipment
under the supervision
of

Mr. E. E. ADAMS, Vice President.

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110-ton, 800-hp., W

DIESEL-E

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A Westinghouse 110-ton, 800-h plant Diesel-electric locomot placed in service by the Northamptc road in Eastern Pennsylvania.

Since its installation this Diesel the fuel cost from 75 to 80 per cent a that formerly required for steam locor

The locomotive is equipped wit house 400-hp. Diesel engines, whi economical operation because eithe of the engines can be used as requir of the visibility type with control stati

In addition to fuel savings, the this locomotive has been highly satis

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Quality workmanship guarantees every Wes

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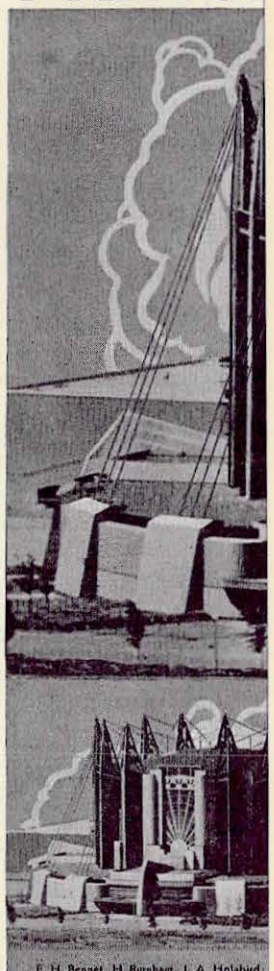

E. H. Bennet, H. Burnham, J. A. Holabird

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Travel and Transport Building. All structural material, some 2500 tons in amount, furnished and fabricated by American Bridge Company.

¶ American Steel and Wire Company wire rope supports the "sky-hung dome"

AMERICA

SUBSI
General

US STEEL

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Minneapolis, N

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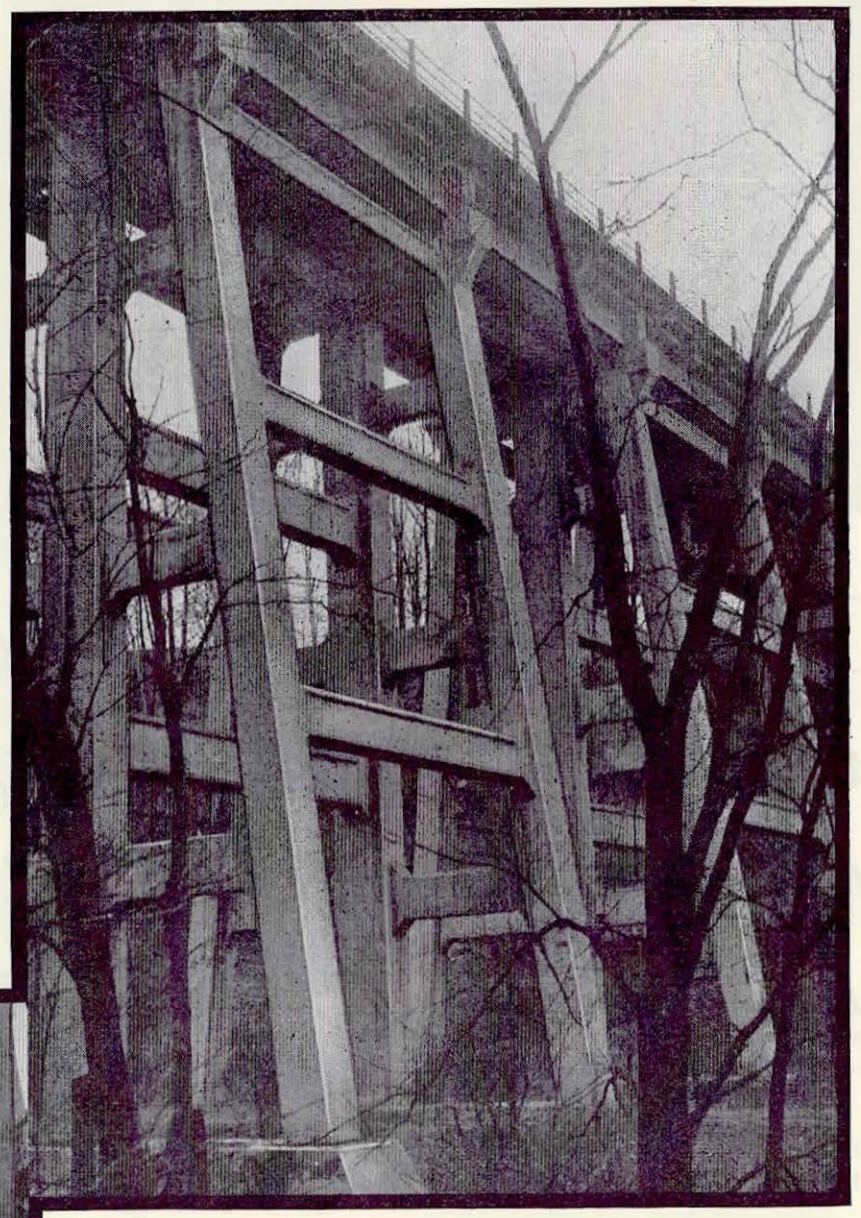
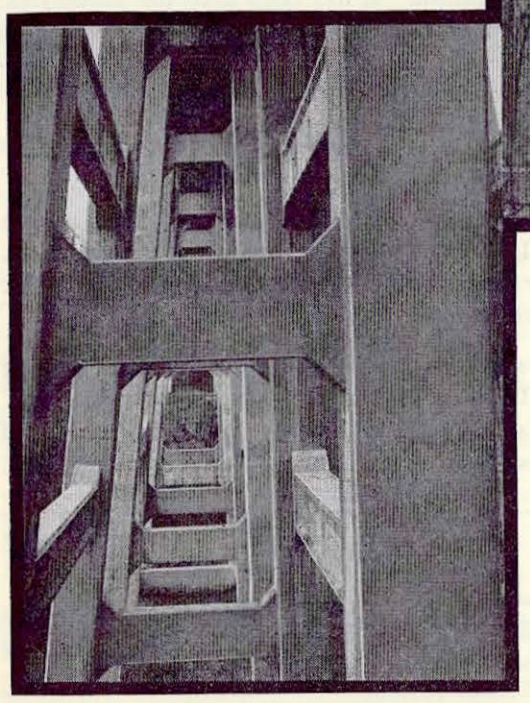
Concrete-Quality Controlled

NEITHER HEIGHT NOR SPAN NEED RULE IT OUT . . .

This concrete viaduct, over 80 feet high, built 14 years ago by the Canadian Pacific, at Toronto, Ontario, shows that it is practical and it is economical to build concrete viaducts to much greater heights than are usually associated with them.





The pre-cast T-girders carry the tracks over 36-foot spans.

The concrete is in excellent condition today.

Another viaduct of this type, built at about the same time, in South Carolina, is also in excellent condition today.

The service of these viaducts affords a complete and successful test of this type of construction under widely varying climatic conditions.

Information on request. Write Room 199, care of:

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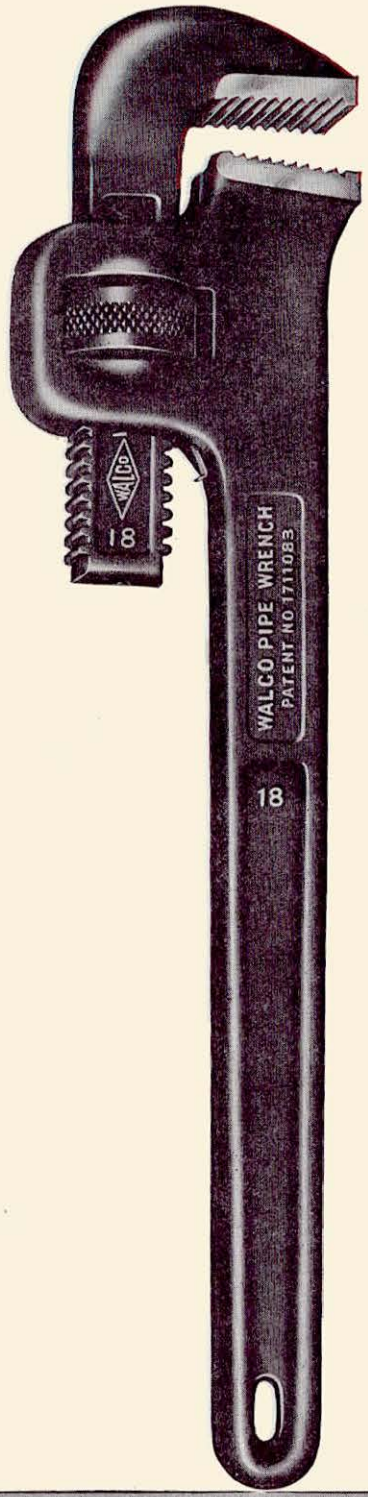

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Walco Pipe Wrench

guards against accidents and should be part of your Safety Program because

It's Stronger

—in fact, the strongest pipe wrench made. All forged steel, heat treated. Housing forged integral with bar. Just four parts.

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creation of a Research Department
for development of transportation equipment
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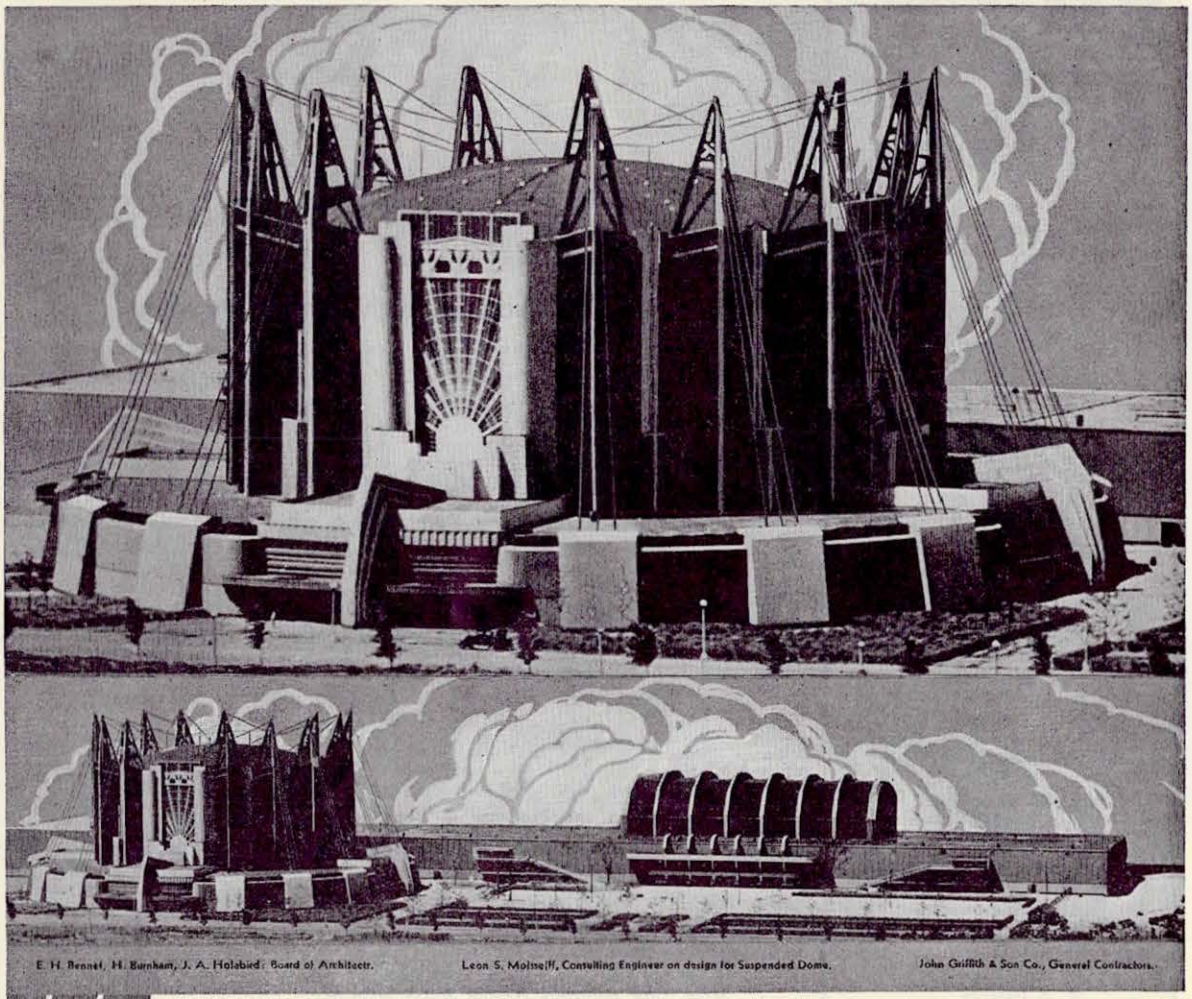
THE SUSPENSION PRINCIPLE PUT TO NOVEL USE



E. H. Bennet, H. Burnham, J. A. Holabird, Board of Architects. Leon S. Moisseiff, Consulting Engineer on design for Suspended Dome. John Griffith & Son Co., General Contractors.

Travel and Transport Building. All structural material, some 2500 tons in amount, furnished and fabricated by American Bridge Company.

¶ American Steel and Wire Company wire rope supports the "sky-hung dome"

THE Travel and Transport Building at the Century of Progress Exposition represents the new age as strikingly as any exhibit that it houses. For proper showing of the equipment of modern railway, air and water transportation, unprecedented requirements were involved. Very large spaces under roofs but free from obstruction by any supporting members, was the prime essential. To meet this requirement, the architects and engineers designed a structure as novel as it is efficient.

The interior comprises two principal rooms, one circular, one rectangular, besides a great deal of other space for various uses. Centered over the circular part, which is 300 feet in diameter, hangs the roof of a dome 206 feet in diameter, held 120 feet above the floor by steel cables. These are strung in the manner of a suspension bridge from twelve steel towers which form the sides of the central room. Over a section of the main rectangular part, the roof is supported by three-hinged steel arches. The housings of these arches, like the towers and cables that support the circular dome, are exposed and thus turned to full architectural account. The visible effect is wholly unique, and has attracted a great deal of attention.

When in Chicago, visit the exhibits of Subsidiaries of United States Steel Corporation, General Exhibits Building

AMERICAN BRIDGE COMPANY

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

General Office: Frick Building, Pittsburgh, Pennsylvania

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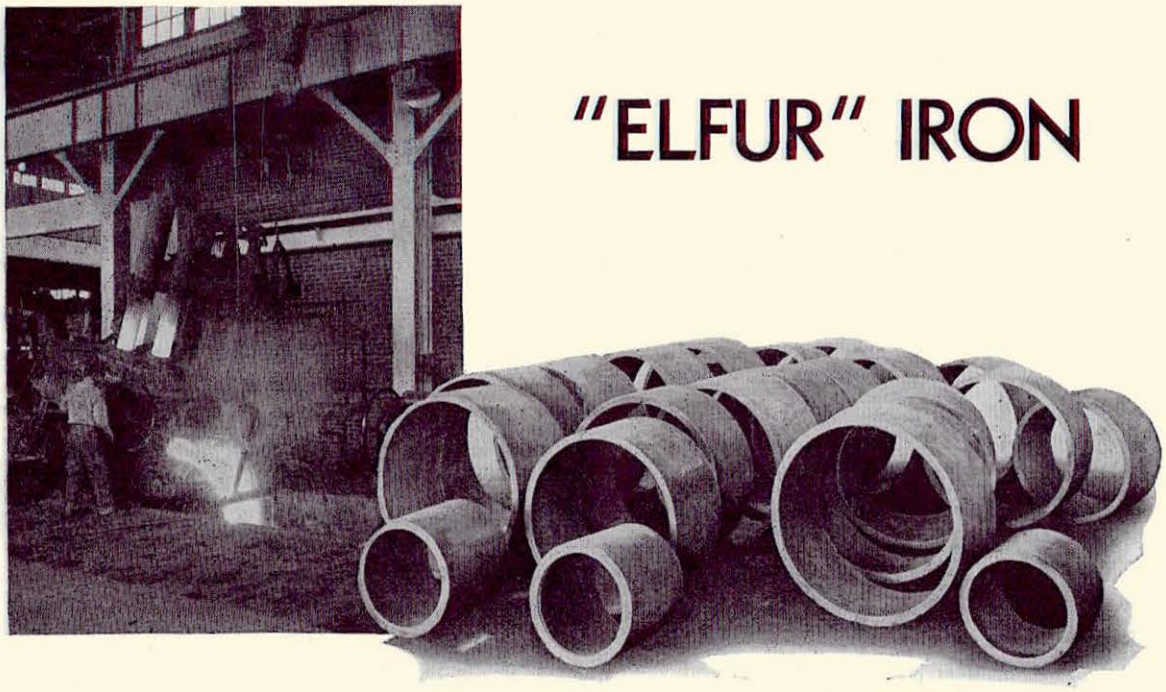
Pacific Coast Distributors: Columbia Steel Company, Russ Building, San Francisco *Export Distributors:* United States Steel Products Company, New York



"ELFUR" IRON

"ELFUR" iron is recommended for —

Cylinder and valve chamber bushings.

Piston and piston valve bull rings.

Piston and piston valve packing rings.

Crosshead shoes.

Valve motion bushings.

Hub liners.

Pedestal gibs and wedges.

The piston and piston valve packing ring blanks shown are made of long-wearing "ELFUR" iron produced by the electric furnace process.

The electric furnace gives high, closely-controlled melting temperatures which —

(a) break down the graphitic carbon in the iron and give a denser structure.

(b) produce a more fluid iron, thereby releasing and eliminating a larger percentage of impurities.

THE BALDWIN LOCOMOTIVE WORKS ELFUR PHILADELPHIA, PA.

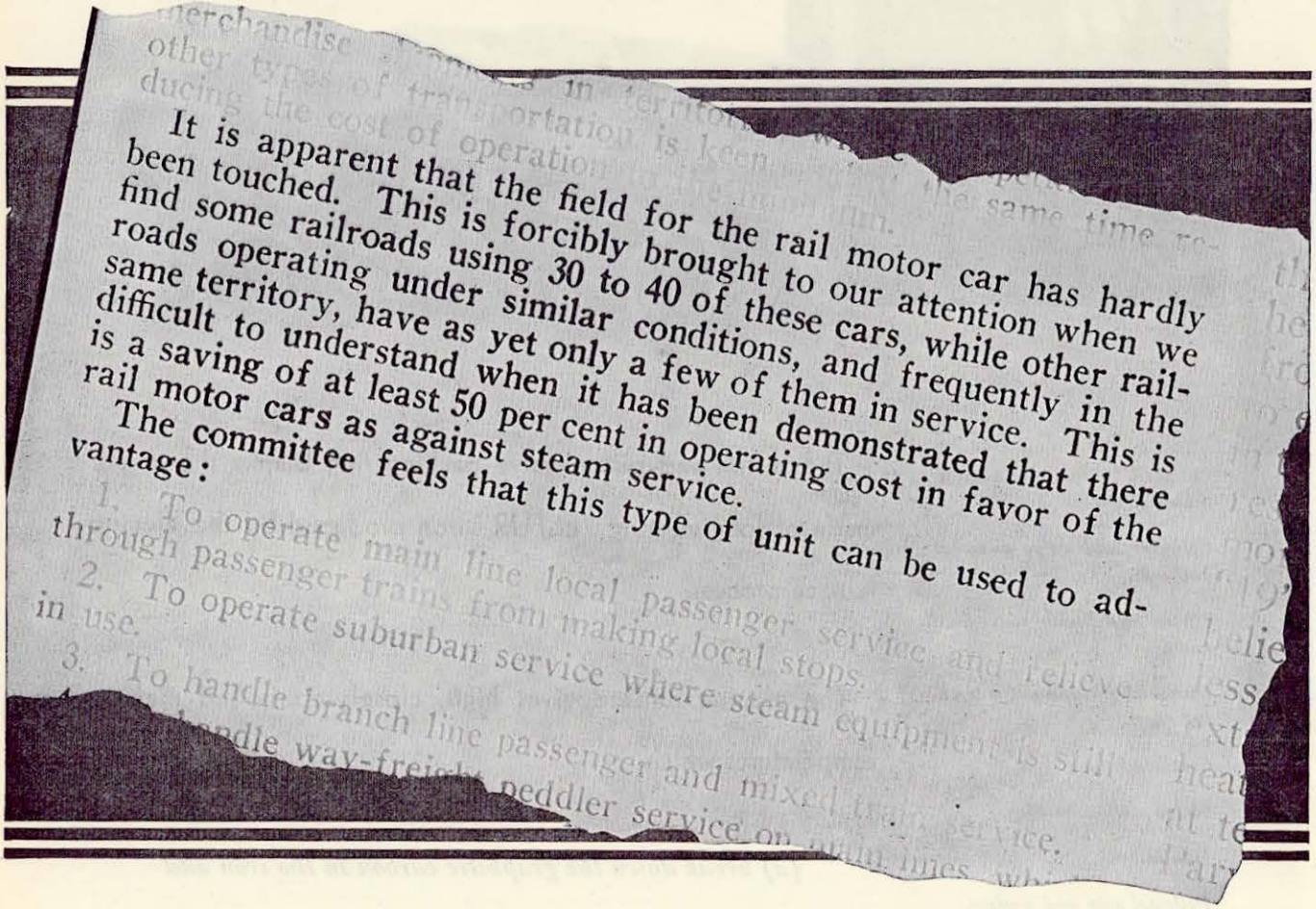
"ELFUR" castings can be furnished rough, or machined ready for application.

Why not give "ELFUR" a trial on your hardest wearing job?

THE BALDWIN LOCOMOTIVE WORKS

PHILADELPHIA

"....there is a saving of at least 50% in operating cost in favor of the rail motor cars as against steam service."



It is apparent that the field for the rail motor car has hardly been touched. This is forcibly brought to our attention when we find some railroads using 30 to 40 of these cars, while other railroads operating under similar conditions, and frequently in the same territory, have as yet only a few of them in service. This is difficult to understand when it has been demonstrated that there is a saving of at least 50 per cent in operating cost in favor of the rail motor cars as against steam service.

The committee feels that this type of unit can be used to advantage:

THIS extract from a committee report* at the recent convention of the American Association of Railroad Superintendents is an indication of what operators think of rail motor cars. General Electric's twenty-eight years' experience with rail motor cars confirms their conclusion.

The installation of rail motor cars is an economic necessity. And, like all worth-while modernization, it will soon pay for itself in reduced operating costs.

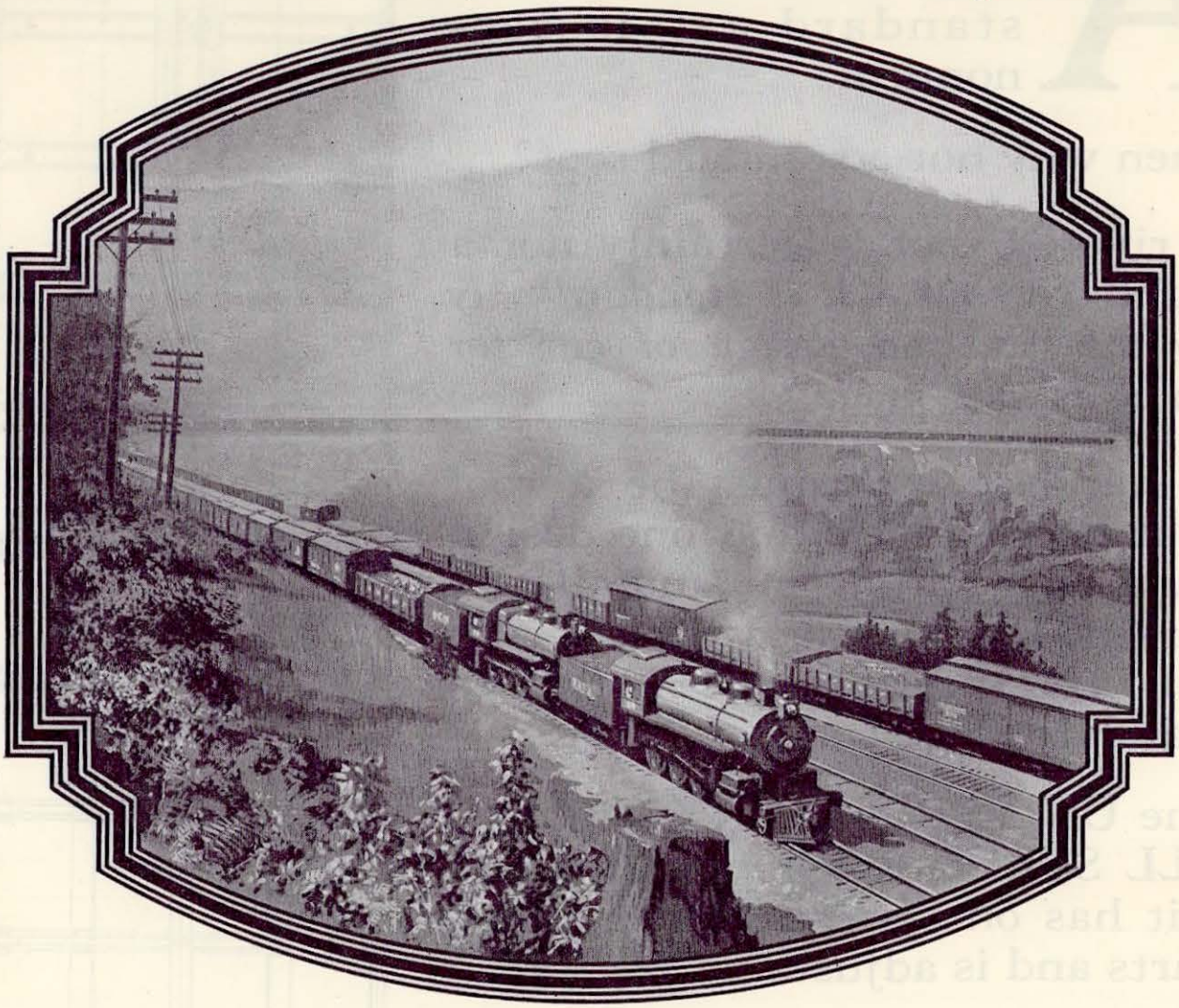
There are already in service more than 725 rail motor cars with electric drive. G-E equipment is installed on more than two-thirds of these cars and has proved its dependability. General Electric Company, Schenectady, N. Y.

*Railway Age, June 24

391-55

GENERAL ELECTRIC

ARE YOU READY for the upturn?



INCREASED traffic produced by new business when it comes will go to the railroads who are prepared to handle it with the greatest efficiency and dispatch.

Experience has proven that the managements who adequately maintain and modernize their rolling stock in periods when traffic is at low ebb are the ones who reap the greatest benefit when traffic again becomes normal.

Thousands of cars now in storage equipped with obsolete arch bar trucks cannot be returned to profitable service until stronger and safer trucks have been applied to them.

Let us submit a design of integral box cast steel truck which can be used to replace the arch bar trucks now on stored cars. The cost of such trucks will be surprisingly small and there never was a time when installation costs are less than they are at present.

AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS

A standard car is economical.

Then why not a standard roof?

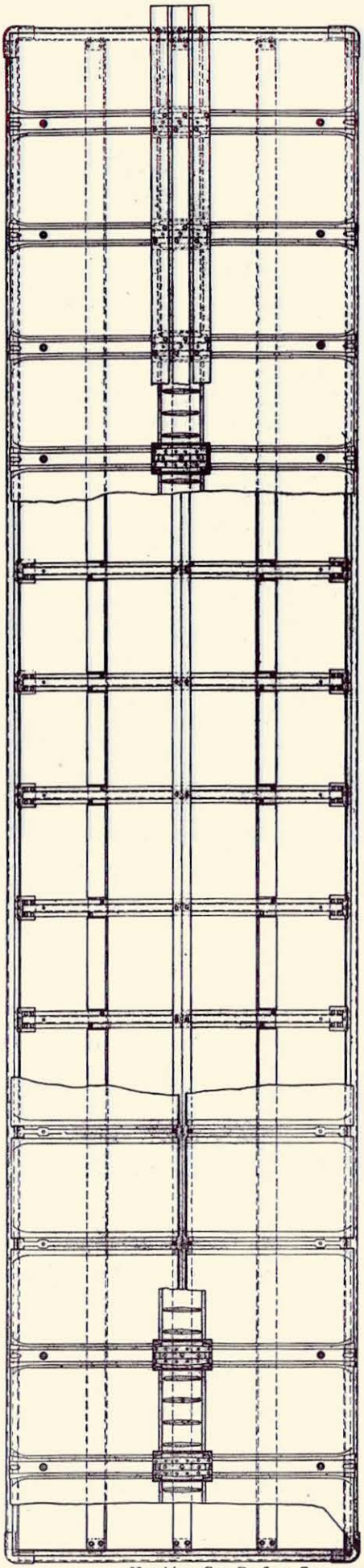
A riveted roof is certainly not a standard roof. (*It is standard only for the size and design of car for which it was made.*)

A standard roof must be a roof that has one size and one design parts that will fit any and all new cars of any size and design, also all existing cars operating on standard gage tracks.

The UNIVERSAL DRY LADING ALL STEEL ROOF is such a roof —it has one size and one design parts and is adjustable.

Some have a mistaken idea that a Riveted roof holds the car frame the strongest and most rigid. Figure it out for yourself. You will find that it is really the Universal roof, it has longitudinal members (not found in any riveted roof). Plan view shows why—it is patterned after the underframe of a car.

Inspection of cars shows Universal roofs are outwearing Riveted roofs respectively one to two.



Hutchins Car Roofing Company

RAILWAY AGE

The Railways and Problems of Recovery

In some respects the conditions with which the railways are now confronted resemble those with which they were confronted in the last one-half of 1922. Now, as then, they are recovering from the effects of a depression, although the present depression has been much longer and more severe than the post-war depression, and their freight car loadings in August, 1933, in spite of the increases in them that had been occurring for some months, were almost 27 per cent less than in August, 1922. Now, as then, they are beginning to rehabilitate their properties in anticipation of a continuing increase in traffic, but the expenditures for rehabilitation which they were making then present a striking contrast to the expenditures for the same purpose that they are making now.

For example, in the three years 1919-1921, inclusive, they placed orders for only 2,451 locomotives, while in 1922 alone they placed orders for 2,600. In the three years 1930-1932, inclusive, they ordered only 687 locomotives and in the first six months of 1933 only 7. In the three years 1919-1921, inclusive, they ordered only 129,615 freight cars, and in 1922, 180,154. In the three years 1930-1932, inclusive, they ordered only 59,208 freight cars, and in the first one-half of 1933 only 655. In the three years 1919-1921, inclusive, they ordered 2,319 passenger cars, and in 1922, 2,382. In the three years 1930-1932, inclusive, they ordered only 717 passenger cars and in the first one-half of 1933 only 7. In the second one-half of 1922 they ordered 1,753,000 tons of rail, the bulk of the orders being placed in October in which month alone they amounted to 1,355,800 tons. In the first one-half of 1933 they ordered only 97,954 tons of rail.

Meeting Future Traffic Demands

In view of the fact that railway earnings declined so much more during the present depression than during the post-war depression, it is not surprising that railway purchases also have declined so much more. Furthermore, as railway gross earnings are still so much less than they were in 1922, and general financial conditions are so different, it is not surprising that there has not as yet occurred any such revival of railroad buying as occurred throughout 1922.

The statistics regarding equipment orders in the four years ending with 1922, and in the three and one-half years ending with June 30, 1933, do, however, present a striking contrast and raise a question as to the situation with which the railways are going to find themselves if the improvement in general business is going to continue and accelerate during the last one-third of 1933 and during 1934, as it did during the last one-third of 1922 and throughout 1923. It is true that recovery must continue a long way before it restores business to the level it reached in 1923, but it is also true that the railways ordered more than 5,000 locomotives in the four years ending with 1922, and only 694 in the three and one-half years ending with June 30, 1933; that they ordered over 300,000 freight cars in the four years ending with 1922, and less than 60,000 in the three and one-half years ending with June 30, 1933; that they ordered almost 5,000 passenger cars in the four years ending with 1922, and less than 800 in the three and one-half years ending with June 30, 1933; that their purchases of rail and other materials have been correspondingly reduced, and that, therefore, railway rehabilitation will have to go a long way before it will restore the railways to the condition to handle traffic in which they were in 1923.

Differences in Financial Conditions

The financial conditions with which the railways were confronted in 1922, were very different from those with which they are confronted now. They will probably earn more net operating income in the second one-half of 1933 than they did in the second one-half of 1922, but in 1922 they could go into the open market and raise a large amount of new capital on their own credit, while at present, largely because the federal government is taking so much of the capital available to carry out its recovery program, it is much more difficult than it was in 1922 for the railroads, or any other private industry, to get new capital. Fortunately, the government stands ready to help the railways finance their requirements. Meantime, a real increase in railroad buying out of current earnings already has begun. It is impossible at present to estimate the amount of this increase, but the number of railway employees increased almost 100,000 between March and August, and many of these were recalled

to do maintenance work, which necessarily involves the use of materials and supplies.

Change in Trend of Railway Accidents

The railways have no other record of which they can justifiably be so proud, or which they should guard so jealously, as their record for increasing the safety of their service. Railway accidents are divisible into three classes, first, train accidents; second, train service accidents; and, third, non-train (including industrial) accidents. Train accidents are the best measure of the trend of safety in railway service.

There was a sharp difference between the trend of train accidents in the first four months of 1933 and in May, the latest month for which accident data are available. The statistics given in the accompanying table show that there was a decline in every class

Train Accidents

		First 4 months	Per cent decrease	May	Per cent increase
Collisions	1933	308	29.7	93	20.8
	1932	438		77	
Derailments	1933	975	21.9	271	20.4
	1932	1248		225	
Locomotive-boiler accidents	1933	4	...	0	...
	1932	4		2	
Other locomotive accidents	1933	143	26.7	43	19.4
	1932	195		36	
Miscellaneous	1933	179	15.2	57	35.7
	1932	211		42	
TOTAL	1933	1609	23.2	464	21.4
	1932	2096		382	

of train accidents, excepting one, in the first four months of 1933 as compared with 1932, and an increase in every class of train accidents, excepting one, in May, 1933, as compared with 1932. The reduction in the total number of train accidents in the first four months of the year was over 23 per cent, while the increase in the total number in May was over 21 per cent.

The reasons for the sharp change in the trend of train accidents from downward to upward seem apparent. The volume of traffic and train service was less in the first four months of this year than in 1932, while car loadings and freight train miles were greater in May than in 1932. There had been under-maintenance and reduced supervision of employes for many months, both being due to the necessity of severe retrenchments to offset reductions of earnings. The cumulative effects of under-maintenance and reduced supervision had added to them in May the effects of increased service, and the increase in train accidents undoubtedly was due to this combination of circumstances.

Accidents, Maintenance and Supervision

There is always a tendency for the officers of each railway to say that, in spite of the severest retrenchments, they have kept their properties in safe operating condition, and railway managements surely have accomplished marvels during this depression in actually reducing accidents while practicing the severest retrenchments, but the best railway management cannot accomplish the impossible, and it is impossible to reduce supervision and expenditures for maintenance as much as they have been reduced during the last four years and at the same time keep railway organizations and properties in such condition that previous safety records can be continued in spite of an increase in the volume of service required. There is only one way when traffic increases, after a long period of retrenchment, adequately to safeguard the safety record, and that is make the increased expenditures for supervision and maintenance necessary to remedy as rapidly as practicable the ravages caused by retrenchment.

NRA and Business

We publish elsewhere in this issue a letter from J. R. Cardwell, president of the Cardwell Westinghouse Company, criticizing as "absolutely incorrect" and "grossly misleading" certain statements made in an editorial that was published in the *Railway Age* of September 9. The statements to which Mr. Cardwell takes exceptions showed that, as measured by freight car loadings, general business improved more than seasonally in April, May, June and July, and then improved less than seasonally in August, and implied that failure to maintain the improvement in August was due to influences introduced into business by certain of the recovery policies of the national government. As was pointed out in the editorial in question, in July average weekly car loadings were only 38.4 per cent less than in July, 1925-1929, while in August they were almost 42 per cent less, and it can now be added that in the two weeks ended on September 9, they were 42.6 per cent less than in 1925-1929.

That the *Railway Age* may not be alone in believing that some of the recovery policies have been having a retarding rather than a stimulating effect recently is indicated by the fact that the Standard Statistics Company said in a bulletin dated September 15: "The business machine continues to creak under the strains imposed by the mass adoption of new operating codes of practice in the major industries. Individual trades, having made their mutual agreements, now are trying to live up to them. Temporarily, at least, the result is confusion as industrial outputs lag, awaiting the hoped for upturn in consumer demand." In the same bulletin, however, the Standard Statistics Company said elsewhere: "There are uncertainties ahead, but they are mainly of the near term variety; belief in the prospect that business again will move ahead before the year is out still is thoroughly justified." This seems to be in accord with the opinion expressed in the editorial upon which Mr. Cardwell comments to the effect that "regardless of the administration's recovery activities, general economic conditions in the country are much better than they were a year ago, and that they will continue to improve"—to which, however, we added, "if business men will show the ability, initiative and courage upon which the revival of business is just as dependent, and perhaps more dependent, as it would have been if most of the recovery legislation had never been enacted."

The *Railway Age* is not a political but a business

paper, and has no political ax to grind in attributing either merits or demerits to any government economic policy.

General Business and the Railways

As a business publication it is devoted primarily to railway affairs, and concerns itself with the trend of general business primarily as it affects railway traffic and earnings. Inasmuch, however, as recovery of the railways is principally dependent upon increases in their traffic due to continuing improvement of general business, this paper could not adequately discuss railway affairs without discussing important influences affecting general business, including NRA.

This paper repeatedly has expressed the opinion, and published data in support of it, that an improvement in general business began over a year ago, was arrested in the first quarter of 1933 by deterioration of the banking and credit situation, and was immediately resumed at an accelerated rate after the banking moratorium. From the beginning we have regarded with skepticism the industrial and agricultural recovery policies of the administration, fearing, among other things, first, that they would prevent an adequate increase of agricultural purchasing power by unduly increasing the production costs and prices of things that the farmers must buy, and second, that by increasing costs in industry they would cause industrial concerns to raise their prices to reduce their losses or increase their profits with the effect of curtailing the effective demand for their products. Apparently these apprehensions have not been without foundation, but at the same time, it seems probable that the forces, natural and artificial, working for recovery are much stronger than those retarding it, and that within a few weeks the upward trend of business will be resumed. One of the reasons for believing this is that business is still improving in most other countries.

The Railways as Educators

The broadening and educating effects of travel have long been known to our foot-loose citizenry. But the importance of our railroads as educators to the stay-at-home younger generation has rarely been emphasized nationally. A recent study of the details of railway taxation made under the direction of the Association of Railway Executives affords a basis of measurement of the importance of the railways to education.

This study includes a state-by-state summary of the uses made of the taxes paid by the railroads. Due to the inadequacy of certain state records, some of the statistics apply to the year 1930 while others apply to the year 1931. This difference, however, according to the report, is not considered of sufficient importance to deprive the figures of very great interest and value.

The report shows an annual payment by the railways of $148,041,456 in school taxes. According to the Office of Education of the U. S. Department of the Interior, the average expenditures on public elementary and secondary schools in 1930 amounted to $90.22 for every pupil enrolled. This figure includes expenditures for new buildings as well as operation and equipment costs. Even on this basis, however, annual school taxes paid by railroads were sufficient to provide a year's education for 1,640,894 pupils.

Education costs in Illinois in 1930 in primary and secondary schools averaged $110.42 per pupil enrolled. Railway school taxes in that state were $10,864,070, or an amount sufficient to pay the year's expenses of 98,389 pupils. Similarly, railway school taxes were sufficient to pay the annual expenses of 86,452 pupils in Michigan, 80,047 pupils in Ohio, 79,210 pupils in New Jersey, 70,956 pupils in Oklahoma, 70,384 pupils in Pennsylvania, 70,087 pupils in Virginia, 68,045 pupils in West Virginia, 65,909 pupils in Kentucky, 60,492 pupils in Arkansas, 59,290 pupils in Indiana, 54,736 pupils in New York, and 51,648 pupils in Kansas.

One does not have to travel to be educated by the railways.

Simple Changes Which May Attract Patronage

A pleasing change has recently been made in a terminal restaurant on an eastern road. The terminal is antiquated and, under normal conditions, probably would have been replaced. On the other hand, traffic has declined so heavily at this point that great expense for remodeling could not be justified. The restaurant until lately shared the shabby antiquity of the terminal. It was dark and dingy and its fixtures, too young to have the charm of genuine antiques, were nevertheless too old to retain any of their original attractiveness.

Now all this has been changed. The restaurant has paneling of light wood. It has bright new fixtures. It is well lighted. The waitresses have lost their air of dejection, and patronage is on the upgrade. The brightness of the restaurant has given the whole station a new appearance as a going concern. And yet the expenditure could not have been great. Nothing has been attempted beyond simulating the interior of a popular modern lunch room of the better class.

The railways have many old stations at points where traffic does not justify replacement or elaborate modernization, but where, nevertheless, a little skillful "renovization" now so popular with residence structures, would probably attract enough new business to justify its cost, to say nothing of the favorable effect such changes would have on present patrons. And in any such change, might it not be well to make sure that the railroad station, instead of being the highest priced place in town to get a sandwich, a newspaper or a soda, is changed to the cheapest? And cannot something be done to improve the appearance and the outlook on life of some of the news "butchers"? These matters in themselves are, perhaps, unimportant, but they are a part of the externals by which the railroad industry is judged.

Influence of the AB Brake on Freight-Train Operation*

Certainty of brake operation and rapid serial action permit increased average speeds and reduce shocks

By L. K. Sillcox,
Vice-President, New York Air Brake Company

AS long ago as 1922 and consequent upon reports of the Bureau of Safety of the Interstate Commerce Commission attention was called by the federal authorities to the fact that the amount of braking power ordinarily provided was insufficient to prevent the frequent occurrence of accidents from collisions and runaways, many of which might, they considered, have been modified, or averted, had the trains been more adequately supplied with modern power-braking apparatus. The lack of major improvements provided in power-brake equipment throughout a period when increased speed came to be demanded, when increasing traffic required heavier trains, and when consequently more ponderous and powerful locomotives had to be applied for their transport-circumstances, all of which would have naturally, one would assume, induced the administrations to effect a corresponding readjustment of their power-braking appliances, has been conspicuous. While it has been generally conceded that the K triple valve, first offered in 1905 to satisfy the train-control requirements of the time, is poorly adapted to modern needs, over 2,000,000 freight cars are now so equipped and facilities have been selected and personnel trained to provide for their service. The replacement of a unit so widely employed must, of necessity, be most cautiously approached.

Freight Handling a Complex Problem

The special problem surrounding the handling of the freight service is very complex; in fact, it is actually a series of problems rather than a single consideration, dealing with a distinct department of railway business, the characteristics of which are peculiar to itself. The time is sharp, competition severe and patrons exacting. The trains, as a rule, are long and the locomotives fairly heavy. In order to make the time all the power of the brakes and skill of the engineman must be brought into requisition again and again. Rapid acceleration of movement for freight trains is a matter of importance; retardation, its logical opposite, no less so. It is clear that the ratio existing between the number of stops, or rather their frequency, and the average running time of a train depends largely on the rate of acceleration in starting and the efficiency of the brakes in stopping. Every second lost in making a stop decreases the average speed by lessening the time that the locomotive can be worked.

How Time Is Saved

In addition to its functions as the major factor in promoting the safe operation of modern trains at relatively high speeds, the AB brake has a direct influence on the expeditious and economical conduct of freight service as indicated by the following study which assumes conditions typical of those which are met in everyday freight-train operation.

Two trains are selected, identical in every respect except that the 90 cars of Train No. 1 are equipped with K triple valves, whereas the AB equipment is installed on each car of Train No. 2. Each train consists of 4,300 gross tons behind the locomotive which is assumed to be a modern 4-8-4 type capable of hauling 4,300 tons at 40 m.p.h. on level tangent track. The section of track involved consists of four 4,200-ft. blocks protected by position-light signals. Both trains reach *A* at the same instant, with a speed of 40 m.p.h. At *A* both trains receive a caution indication displayed at *B*. The engineman of Train No. 1, in order that he may be prepared to stop in the block *B-C* with all free slack closed in, shuts off his throttle at *A* and applies the brakes independently on the locomotive, attaining 40-lb. brake-cylinder pressure in 60 sec. The slack gradually closes and the train is gently retarded, due to the influence of the locomotive brake and inherent train resistances. Upon passing *B* he receives a stop indication at *C* and, when approximately 3,500 ft. from *C*, with his speed reduced to 30 m.p.h., after a brief release of his locomotive brakes, he makes a train-service application, sufficiently heavy to insure his stopping within the block. Approximately 10 sec. after initiating the service application through his train signal *C* turns to caution and later indicates clear. He is compelled, however, to complete his stop for practical reasons and to avoid damage to his train. He stops 200 ft. short of *C* and is compelled to wait 3 min. at that point to insure the release of all brakes. He then proceeds, utilizing the full capacity of his locomotive to bring his train again to speed. At the end of 11½ min. he has travelled 16,500 ft. past *A* and has attained a speed of 31 m.p.h.

The engineman of Train No. 2, receiving the caution indication displayed at *B* and confident of the action of his brakes, with serial action rapidly propagated by the improved quick-service function at his command, does not reduce speed until, when 3,500 ft. from *C* displaying a stop indication, he starts his service-brake application. Twenty-five seconds after the start of his brake application *C* moves to caution and he effects a release of his train brakes. The train continues to slow down as the train brakes release and, when practically all braking effort is removed, he opens his throttle gradually and the train accelerates while the signals clear ahead. As a result of this permissible manipulation his train covers 16,500 ft. past *A* in approximately 5 min. and is then moving at 40 m.p.h.

The average speeds of the two trains over the specified distances of 16,500 ft., calculated on the indicated time basis of 11½ and 5 min., are readily seen to be 16.4 and 37.6 m.p.h. respectively. Similarly, in the case

* Abstract of a paper presented before the Car Foremen's Association of Chicago, September 11, 1933.

of the K-equipped train an equivalent delay of 6½ min. is chargeable against the equipment. At an average speed of 37.6 m.p.h. a 100-mile division will be covered in 2 hr. 40 min. One such delay reduces the schedule speed to 36 m.p.h.; two result in a schedule speed of 34.7 m.p.h., and three produce a schedule speed of 33.3 m.p.h. Every delay is costly and innumerable avoidable delays occur where K triples are employed, which can be effectively overcome when the new equipment is substituted. Speed restrictions need not extend beyond the immediate locality where reduced speed is required.

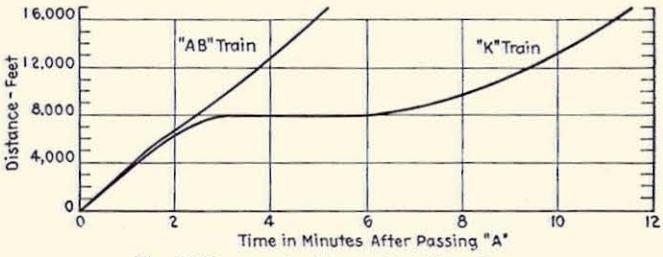
High schedule speeds in freight service demand powerful locomotives of the most modern type and they must be kept running, otherwise top speeds will become not only unsafe, but also unduly burdensome to the extent of greatly limiting the tonnage to be carried per train. The aim must be to reach schedule speeds as close to the top speed rating as possible.

The features which must be present in any improved brake type are dictated by two major considerations: First, reliability of the various functions introduced to insure effective retardation of the cars upon which it is installed, and, second, ability to control internal movement of the individual cars which compose the train as well as the movement of the train as a unit mass.

Variable Conditions Which the Brake Must Overcome

The AB brake design is founded upon sound engineering principles, with full appreciation of the conditions under which it will be called upon to operate and with thorough consideration of the several variable factors which unite, in infinitely diversified combinations, to disturb the otherwise directly calculable results of brake action. Of these last named factors variable piston travel on individual cars, variable brake-pipe leakage, variable coefficient of friction between brake shoe and wheel tread, and between wheel tread and rail head, serial transmission of the brake impulse through successive cars, and the relative movement between coupled cars merit the most careful study.

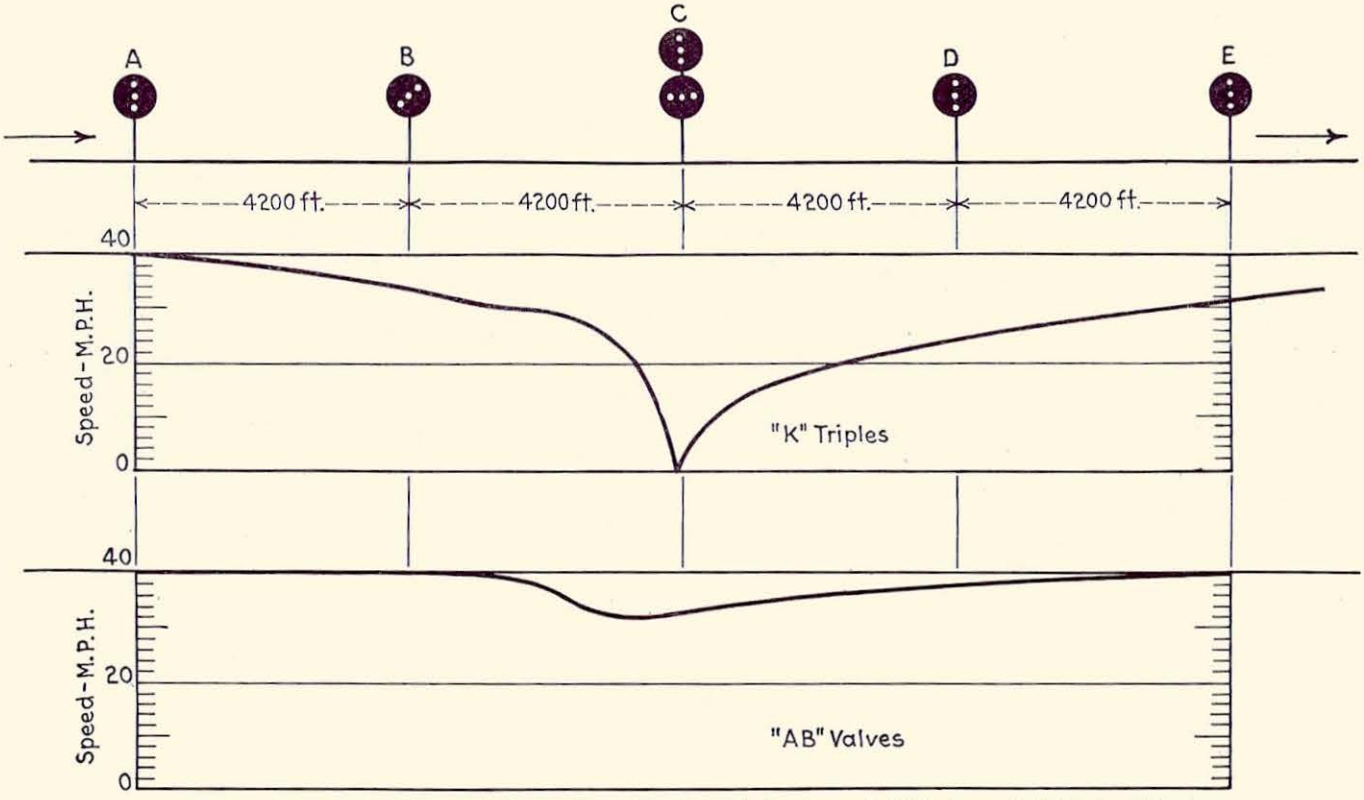
Marked uniformity in pressure within the brake cylinders of all the cars composing a train is the first consideration in producing effective retardation and herein resides one of the major limitations of the K triple valve which requires excessive brake-pipe leakage to insure operation of all valves in a modern train when



The Difference in Time of a Slow Down

normal service-brake applications are desired. It was repeatedly demonstrated during the American Railway Association road tests that, with minimum brake-pipe leakage, application of brakes back of the eightieth car could not be reliably obtained with a 5- to 7-lb. equalizing reservoir reduction when the K valve was used. Consequently, the braking effort required for the control of modern trains becomes concentrated at the head end, aggravating the severity of slack closure of rear cars and lengthening the stopping distances otherwise obtainable. Long stopping distances increase the time and space through which brakes must be held applied and, in turn, influence the abnormal wear of brake shoes and wheel treads, the excessive heating of which may break down the surface structure, through raising the thermal gradient between wheel tread and center, contributing further to unwarranted maintenance costs and operating hazard.

The principle which underlies the operation of any



Relative Effect on Speed of Slow-Downs Caused by Signal Indication with K Triples and AB Brake Valves

automatic brake deals with the theory of the flow of air in pipes, propelled by variation in static pressures. The laws governing fluid flow are neither uniform nor inflexible, being subject to innumerable variable factors which involve the nature and extent of the exposed surfaces, the temperature of the air in so far as it affects its viscosity, the nature of the air flow, parallel or turbulent, depending upon the velocity of its movement, the presence of changes in direction and section of the conductor, and the thickness of the more or less stagnant layer adjacent to the pipe surfaces. Countless investigations have been conducted and volumes written on their explanation, yet the laws governing air flow have yet to be resolved into a workable formula for general application. It is, then, with such medium that the air-brake engineer must work and the effects to be produced must, of necessity, be brought about by relatively small pressure differentials, acting upon surfaces of practical commercial proportions. It is further required that every function be essentially stable, yet sensitive, in order that the will of the engineman may be accurately carried out through the train, producing the response which he anticipates.

The heart of the air-brake circulatory system is, of course, the control or triple valve and any derangement of its functions is fatal to the whole anatomy. The principal cause of this derangement, found by service results, is the occasional presence of foreign matter which in one way or another finds its way into the pipes and thence to the vital cavities of the operating valves, finally imbedding itself in slide valve seats and slide valves, adding materially to the frictional resistance which must be overcome in slide-valve movement and shortening the service life of such parts before repair or replacement. Standard practice has, for many years, required the use of a dirt collector in the branch pipe, removing free moisture and heavy dirt particles from air entering the triple valve by centrifugal separation. To more adequately protect the AB operating valve parts, thus increasing their reliability and reducing the maintenance requirements, the well-known centrifugal dirt collector is supplemented by a curled hair strainer which filters all the air before reaching the graduating valve and piston packing rings, intercepting any and all minute bits of solid matter which are not arrested by the dirt collector. The strainer cartridge is readily accessible and easily removed when the operating valve is dismantled for periodic cleaning. Protection against possible interference with the normal operation of the valve, due to any restriction which might arise from an excessive accumulation of dirt in the strainer, is prevented by the provision of a by-pass line with suitable check valves. This second sentinel, of proven dependability, safeguarding the operating parts of the new valve, is a major factor in permitting an extension of the normal cleaning period when the AB valve is employed, with an attendant material saving to the railways.

Other constructional features of the AB brake have overcome the lack of reliability of the K quick-service function to transmit its operation to every car of modern trains, regardless of their length. Uniformity of results, obtained in time, has been definitely accomplished, nor could a less efficient design fulfill the rigid requirements of the American Railway Association.

The manner in which the brake-cylinder pressure is rapidly developed on every car from the first to the last, the uniform graduation in instantaneous brake-cylinder pressure values from the front to the rear, and the uniform rise of pressure on all cars, maintaining a pressure gradient until maximum pressures are developed, all present important factors in controlling slack action within the train, while the positive results obtained on repeated trials insure that anticipated performance is effected, assisting the engineman, whose judgment must determine the nature of the brake manipulation required in any circumstance.

Service Shock Protection and Stopping Distances

To study the effect of 10-lb. brake-pipe reduction on the rate and violence of slack closure on a modern train with AB equipment throughout, the brake-cylinder pressure on the specified cars may be obtained with reference to data obtained in the tests conducted on the Sang Hollow Extension of the Pennsylvania from March 17 to April 11, 1933, at intervals of 10 sec. from 25 to 65 sec. after the start of the brake application, using average values where two runs were terminated in approximately the same time. Propagation time for service applications on 150 cars averaged 16 sec.

Sec. after start of brake application	Average-run numbers	Brake-cylinder pressure, lb.					
		Car 1	Car 30	Car 60	Car 90	Car 120	Car 150
25	21-41	18.5	13.0	10.25	9	9.0	10.0
35	43-71	25.0	19.0	13.0	11.5	9.5	8.25
45	44	25.0	21.0	18.0	16.0	10.0	11.5
55	45-73	29.5	24.25	20.0	16.5	12.0	12.5
65	25-74	27.0	23.5	19.5	18.0	15.5	14.0

About 3.2 sec. are required for the serial action of the brake equipment to carry through 30 cars. Then, selecting suitable time intervals, the average brake-cylinder pressure will be approximately as shown below, figures not established by the tests being obtained by straight-line interpolation.

Time interval	Brake-cylinder pressure at end of period, lb.					
	Car 1	Car 30	Car 60	Car 90	Car 120	Car 150
0- 3.2	2.3	0.0	0.0	0.0	0.0	0.0
3.2- 6.4	4.6	1.8	0.0	0.0	0.0	0.0
6.4- 9.6	6.9	3.6	1.7	0.0	0.0	0.0
9.6-12.8	9.2	5.4	3.4	1.7	0.0	0.0
12.8-16.0	11.5	7.2	5.1	3.4	2.1	0.0
16.0-25.0	18.5	13.0	10.25	9.0	9.0	10.0
25.0-35.0	25.0	19.0	13.0	11.5	9.5	8.25
35.0-45.0	25.0	21.0	18.0	16.0	10.0	11.5
45.0-55.0	29.5	24.5	20.0	16.5	12.0	12.5
55.0-65.0	27.0	23.5	19.5	18.0	15.5	14.0

Time interval	Average brake-cylinder pressure during period, lb.					
	Car 1	Car 30	Car 60	Car 90	Car 120	Car 150
0- 3.2	1.1	0.0	0.0	0.0	0.0	0.0
3.2- 6.4	3.4	0.9	0.0	0.0	0.0	0.0
6.4- 9.6	5.7	2.7	0.8	0.0	0.0	0.0
9.6-12.8	8.0	4.5	2.5	0.8	0.0	0.0
12.8-16.0	10.3	6.3	4.2	2.5	1.0	0.0
16.0-25.0	15.0	10.1	7.7	6.2	5.5	5.0
25.0-35.0	21.7	16.0	11.6	10.2	9.2	9.1
35.0-45.0	25.0	20.0	15.5	13.8	9.7	9.9
45.0-55.0	27.2	22.7	19.0	16.2	11.0	12.0
55.0-65.0	28.2	24.0	19.7	17.2	13.7	13.2

Excessive shocks occurring in trains with or without relative uniformity of braking ratio throughout can be most effectively brought to a tolerable value by reducing the propagation time of the brakes so that the movement of the slack throughout the train may be gradual and prevent large velocity differences between cars associated throughout a train. This feature has been carefully worked out with the AB equipment and without sacrificing proper stability of the valve against undesired emergency applications developing during service manipulations. In addition, the development of emergency brake-cylinder pressure is automatically controlled in such a manner as to facilitate the closure of train slack at a moderate rate. Further, the emergency brake-cylinder pressure development is automatically modified when a partial service application precedes an emergency application which insures the shortest possible stopping distance consistent with safe train-slack control.

It would not be possible to explain adequately the problem of train-slack shocks obtained with the K equipment as compared with those obtaining with the AB equipment without making reference to the intimate

relationship existing between the shocks and the stopping distances experienced, and also, particularly with respect to the K equipment, to the variation in stopping distances caused by variation in brake-pipe leakage. The difference in the service propagation time and the consequent variation in stopping distances of the K equipment by reason of the degree of brake-pipe leakage were adequately demonstrated during the road trials conducted by the American Railway Association. From a speed of 20 m.p.h. a stopping distance of approximately 1,100 ft. was obtained with a 20-lb. service brake-pipe reduction on a 150-car empty train fitted with K equipment under minimum brakepipe leakage conditions. The same train, unchanged except for an alteration of minimum brake-pipe leakage to maximum brake-pipe leakage, was stopping in approximately 550 ft. In other words, the stopping distance was reduced by one half merely through the introduction of maximum allowable brake-pipe leakage. The reason for this is clear when it is appreciated that with minimum brake-pipe leakage (approximately ¼ lb. per min.) all the brakes did not apply, or responded so slowly that the train was stopped before effective brake-cylinder pressure obtained on all the cars. On the other hand, with maximum leakage (7 lb. per min.) the activity of the K valve was so increased that the application carried through and usually was within the stopping time, causing the average brake-cylinder pressure to be so much higher with maximum leakage present that the stopping distance was reduced as described. Where the stopping distance was 1,100 ft., the train shocks were well within the tolerable limit, whereas in the case of the 550-ft. stop damaging shocks obtained. With the AB equipment the stopping distances were not appreciably affected by the degree of brake-pipe leakage. For example, with minimum brake-pipe leakage a 15-lb. reduction gave a stopping distance of 730 ft. for a 150-car empty train from 20 m.p.h., whereas with a maximum brake-pipe leakage the stopping distance is shown to be 680 ft., a difference of only 50 ft.

The difference in impact velocity when the slack runs in and, therefore, the severity of the shock, all things being equal, is determined by the amount and rate of braking effort developed on the head end of the train in advance of that developed on the rear. Braking with an open throttle is common practice, since it has a tendency to lessen the retarding effect of the brakes on the head end and minimizes the danger of shock from the rear cars running in and then running out severely. Other things being equal, the greater the amount of free slack the higher the critical speed will be and the greater the risk of damage due to shock. There appears to be very little doubt that the amount of shock it is possible to obtain increases in severity in direct proportion to the amount of slack. While slack of itself does not create shock, we do know that where no slack obtains there is no shock.

Brake-pipe leakage directly affects the rate of developing retardation, particularly in service applications, and, therefore, is responsible for severe shocks if not controlled. The more leakage the less control the engineman has over the rate and degree of brake-pipe reduction and, particularly, in the forward portion of trains so affected, causing large differences in braking effect between the front and rear sections of the train.

Curvature and grade are factors which have a wide influence on the amount and type of brake operation. Making a brake application with the head end entering a curve or on an ascending grade with the rear of the train on straight and level track or a descending grade creates a condition where the locomotive crew must take special precaution properly to control the rate of closing the train slack. There is generally a critical speed for a given set of conditions as to train consist, brake-pipe leakage, road conditions, etc., where shocks, due to slack action are the maximum. This is usually at fairly low speed (8 to 12 m.p.h. or less) and great care must be exercised in handling trains within this range. For the critical condition, the head end of the train is just about brought to a stop at the instant the slack closes at the rear. When the speed is lower than this critical point the energy in the train is less and represents less shock production possibilities. If the speed is greater, the retardation at the head end is at a lower rate, due to the lower brake-shoe coefficient and consequently the shock is less.

The most serious factor involved in freight-train control is that arising from hauling loads and empties mixed, and this without taking account of any of the other factors to be considered, but when coupled with them, the situation is surely more serious than most persons would at first appreciate. The braking power varies inversely as the load and, as the cars are now designed to carry about three times their weight, it will be seen that while brake-shoe pressure remains the same as for the light car, the percentage of braking power, so-called, to weight has been reduced to one fourth of what it was or is on the light car.

It is thus perfectly apparent that we are faced with the need for providing a brake equipment that will meet two widely separated and entirely different conditions. It must impart to the empty car a degree of braking power that will not be severe enough to produce serious shocks at the caboose in train operation while in no way interfering with the flexibility of the brake application, and it must, on the other hand, provide a sufficiently high braking power on the fully loaded car to permit of handling modern trains with a sufficient margin of reserve to stop in a reasonable distance. In the absence of a practical means for increasing the braking ratio through a modification of the foundation brake gear or through the introduction of additional brake cylinders to be used for emergency applications, it was decided to incorporate additional reservoir capacity to the AB brake design compared with the K in order to provide for higher brake-cylinder pressures than is possible with the older equipment.

Our general calculation, based upon the rate of brake-cylinder-pressure increase recorded during official tests of the AB brake indicate a measure of slack control heretofore not obtainable. The road trials support the calculated results even though track and other variable operating conditions, which no type of brake can reduce to a uniform level, had to be met. A shock in excess of 2 in., the tolerable limit, measured on the inertia impact instrument, was recorded on a single instance with the empty-car train, stopped with a 10-lb. service reduction from an initial speed of 4.98 m.p.h., brake-pipe leakage conditions adjusted to give a gradient of 11 lb. per min. Under these conditions it is apparent that the critical speed has been materially lowered and it is worthy of note that on this single occasion a shock of 2.10 in. was recorded on the one-hundred fiftieth car only.

The improvement in the quick-service functioning with which we have been dealing is accompanied, in the AB brake construction, with important new and novel characteristics, operative on emergency brake applications. While it has been possible generally to avoid damaging shocks in relatively long trains, especially on level track, by the judicious use of the brake valve in service applications the emergency rate of brake-cylinder pressure build-up which the K triple valve provides, to-

gether with the maximum rate of propagation of which it is capable, is always looked upon as an unescapable source of rough handling at speeds other than the highest at which freight trains normally operate. The further limitations of the K valve, its inability positively to provide an emergency braking rate under conditions other than a fully charged train line and its susceptibility to undesired quick action, have long been recognized, and the American Railway Association, in setting up the standards with which a new brake must comply, has insured that the shortcomings of the quick-action functions of the K will be corrected in every respect.

The effect of the time element in the serial action of the K design of equipment is to produce shocks, especially when emergency stops are made from low speeds. The effect of free slack within a train is to aggravate this condition, since it permits successive cars to move at varying speeds until collision occurs between them. Low speeds are particularly hazardous because when a cold brake shoe is applied to a cold wheel at low rubbing velocities the coefficient of friction between the two contacting surfaces is extremely high, approaching its static value. By controlling the violence of shocks occurring within trains, especially those accompanying emergency stops, a major source of damage to equipment and lading is effectively avoided and, by insuring the production of an emergency rate of pressure development within the brake cylinder of every car at all times, independent of the existing stage of service application or release, safety and flexibility in all normal train operation is fully promoted.

A Safe Emergency and Positive Release

The time required for the propagation of serial action through the train is greatly reduced when emergency applications are initiated. Then, by adding to the reservoir volume of storage air, a high pressure of equalization with the brake-cylinder volume is obtained. The K rate of emergency propagation was checked during the A.R.A. tests on the Southern Pacific and found to be 640 ft. per sec. The AB valve increases this rate of transmitting the brake impulse by 41 per cent, or to 900 ft. per sec., thereby approaching the condition of simultaneous application, the first requirement in reducing internal impacts to tolerable limits. Then, too, a brake-cylinder pressure development 9 per cent higher than that of which the K valve is capable was consistently shown which, at speeds exceeding 40 m.p.h., maintained or shortened the emergency stopping distance obtainable with the rapid and uncontrolled brake-cylinder pressure development of the K valve. In this manner, with the 7.2 sec. delay period between the two distinct stages of pressure development in emergency, the longer stopping distances which a controlled emergency feature would suggest have been largely offset for average conditions.

A feature of equal importance with the improvements witnessed in the quick-service and emergency features of the AB brake is the positive and prompt release of all train brakes upon release manipulations of the brake valve. Whereas it has been generally essential to bring a modern train to a stop upon every brake application on level track to avoid the possibility of breaking the train in two or of sliding the wheels of cars whose brakes are slow to release, the AB operating valve incorporates features whereby a positive release is uniformly effected, permitting the slowing down of trains to satisfy speed restrictions without the necessity for a stop in each instance, provided the initial and slow-down speeds are such as to permit the release to be effected before a stop results. It may be physically possible to slow down a K-equipped train without stop in many instances by anticipating the minimum speed which will be obtained before the majority of brakes move to release position, then initiating an early release at the brake valve and working steam judiciously. However, it is well known that a release can be effected, slow-down restrictions satisfied and the train may proceed with brake shoes tightly engaging several pairs of wheels, invariably resulting in brake-burned, thermal-cracked, or slid-flat wheels. In recognition of this immediate probability general orders usually forbid slow-downs of modern freight trains, demanding a heavy service application and stop to release whenever a brake application is required. The most evident and essential requirement is, then, for a positive release rather than a highly accelerated one. This feature is now available, carrying with it certain functions which improve the promptness of the K release. These are not emphasized since they are not designed to be particularly prominent, extreme flexibility being provided in the factors which allow a train to proceed, after slowing down, without the hazard of picking up wheels.

What Is a Brake Worth?

The economic justification for the expenditure involved in the replacement of existing K valves, still serviceable, is indicated in a general way by deriving its relative economy in seventeen distinct and separate directions. The lack of adequate and dependable data, applicable on a nation-wide scale, has prevented the development of fixed and unquestioned figures pertaining to each of these factors. In consequence, such figures as cannot be directly substantiated have been most carefully and conservatively estimated. By this method it has been shown that the annual savings which may be reasonably expected from the universal adoption of the complete AB brake upon all new and existing freight cars will be no less than $23,350 per 1,000 cars per year. After allowing due consideration to the probable additional cost of major repairs to the AB valve as compared with the cost of repairs of like nature to the K valve, and after charging 6 per cent interest against the initial investment, it can be shown that (when existing cars are equipped with the AB brake) the entire investment can be written off in approximately seven years by capitalizing the minimum savings at 6 per cent. When new cars are constructed and the cost of AB equipment is represented by the additional expense involved in providing the many improved features, the time required for amortization by employment of savings is reduced to approximately five years. Since more accurate and complete records are invariably required by each railway management, or such reliable data can generally be obtained by careful study of regular records of day-to-day operation, both the advantages and relative cost of the AB valve in any specific application can be derived with a high degree of accuracy.

Air-express Traffic over the Railway Express Agency system during the first eight months of 1933 increased by 219.95 per cent over that for the corresponding period of 1932. For August alone air-express business increased by 139.94 per cent over that for August of last year.

The Louisville & Nashville during July handled a total volume of l. c. l. freight which exceeded the movement of July, 1932, by over 19,000 tons. Of this increase, 7,000 tons is regarded as business recovered from other forms of transportation by means of the L. & N. pick-up and delivery service.

How Fifty Railroads Handle Stores Expense

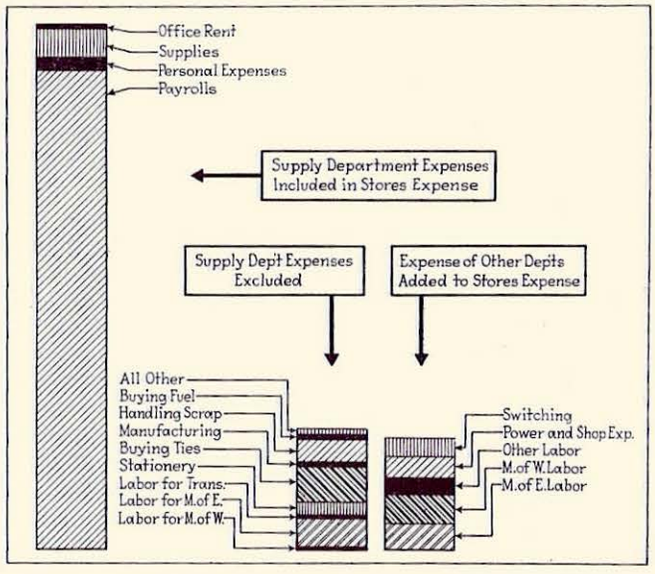
Review of practices throws further light on complicated character of modern supply operations

A RECENT issue of *Railway Age*† summarized a survey of the services performed by railway supply forces in connection with the purchasing, storing and distributing of materials for railway maintenance and operation, and the expenses incurred by railroads in this work. The summary served to point out in a general way the variations in methods of accounting for stores expense on different railroads but afforded no information showing wherein the practices of each road differed from the others. Since such facts are essential to an understanding of stores expense, as well as to any progress hoped for in harmonizing differences in practice, an approach to such a digest of method and viewpoint is attempted in this article by presenting information received from 48 railroads.

In each instance, the roads were requested to report (1) the average amount added to the cost of the material per year to cover stores expense (expressed in this article on a percentage basis); (2) the principal services of purchasing and stores departments which are accounted for under stores expense; (3) the work performed by other than purchasing and stores forces which are also handled through the stores expense account; (4) the activities of purchasing and stores departments which are accounted for in some other way than by charging their cost to stores expense.

It was not practical to secure such uniformity in the reports from all railroads as to permit a complete and absolutely comparable classification of all material-handling activities inviting consideration in such a survey. The reason for this will appear when it is considered that one road may not describe its supply work with the same particulars as another road and also because of the wide variations in the character and extent

†Issue of September 2, 1933.



Composition of Stores Expense on a Typical Road in 1932

Partial Analysis of Stores Service and Stores Expense on Typical Roads

Fig. 1—Work performed by purchasing or stores forces and cost included in Stores Expense. Fig. 2—Work performed by other departments and cost included in Stores Expense. Fig. 3—Work performed by supply department and cost excluded from Stores Expense*

	A. C. & Y.	Alton	A. T. & S. F.	Bangor & Ar.	B. & A.	B. & M.	C. V.	C. & E. I.	C. & N. W.	C. B. & Q.	C. M. ST. P. & P.	C. R. I. & P.	C. & S.	C. & G.	D. & H.	FT. W. & D. C.	Georgia	G. T. W.	Gulf Coast	I. C.	K. C. S.	L. & N. E.	L. V.	L. A. & T.	Soo	M. & N. A.	M. P.	N. C. & S. L.	N. Y. C. & ST. L.	N. Y. N. H. & H.	N. P.	S. A. L.	S. P. P. L.	Wabash	W. MD.
Pricing and Vouchering	2		1	1	1	2	1		1	1			1	1		1		1	1	1	1	1	1		1	1	1		1	1	1	1	1		
Accounting for Issues	2		1	1		2	1						2	1			1	1	1	1	1	1	1	2	1	1	1		1	1		3		1	
Testing Materials		1	2		1	2		1	2	2	3	2	2		1		1	1		3		1	1		1			1		2	1			
Fuel Inspection		1	1						3												3				3								3	
Tie Inspection		1	1	1		3	1		1	1	3		3		3			3	3	1				3	3								3	
Lumber Inspection		1	1	1		3	1		1	1			1					3	3	1		1	1		1		1	1	1	1		1		1	
Handling Stationery		2	1	1			1		1		3	3	3	1		1		1	3			1	1		3	1			1			3		3	
Handling Rail													3			3								3									3	3	
Handling Ties													3					3						3	3							3	3	3	
Handling Roadway Scrap			1	1	1		1		1				1	1	1	3		1	1	3		1			1	1	1	1				3	1		
Handling Shop Scrap		1	1		1		1		1				1	1	1	1	1	1	1	3	1	1			1	1	1	1				3	1		1
Delivery to Shops		1		3	1	1	1		3	3	3	3	3	1		1		1		3		1	1		1		3	3		1	3		3	3	
Clearing Grounds		1							1		3		3	1														3			3				
Trucking						3			1	3	3		1											3						2			3	1	
Operating Scrap Yards			3			3			1		3	3			1	3												1	1						
Operating Reclaim Plants		3	3	3		1			3	3		3			3			3	3			1						3	3	1	3	3	3		
Operating Oil Houses		1	1	1	1	1	1		1	1	1	1	1	1		1		1	1		1	1	3		1	1	1	3				1	1		
Oil Reclamation		1			1					3		3		1									3								3	3	3		
Dismantling Equipment					1	3				3													3					1	3		3	3	3		
Selling Scrap			2	1	1	3	1					3	1		1	1	1	1	1		1	1	1		1	1	1	1	1			1			
General Office Expense	2							2							2									2				2							
Roadway Labor		2	2				2		2	2	2	2			2			2	2		2	2			2			2			1	1		2	2
Shop Labor	2	2	2			2	2	2	2	2	2		2		2			2			2	2				2	2	2			2	2	2	2	2
Switch-Engine Expense		2					2	2	2	2	2	2						2	2		1		1			2	2	2		2	2	2		2	

* Note—Blank spaces left in cases where service not performed by supply forces, or not reported.

of specific operations, as, for example, trucking, scrap handling and reclamation. Neither has it been possible to enumerate fully all the services reported by each railroad. The tabulating of the more important elements of work reported by each road and the enumerating of those services which invite special attention because of novelty or method of accounting, however, throw new light not only on the problem of stores expense but on the broader problem of material handling.

Elements of Cost Considered

It will especially appear from the facts presented that stores expense is not confined to the expenses of stores departments but includes numerous items of expense incurred by other forces as, for example, the cost of switching cars of material, hauling supply cars or trains and various material-handling expenses incurred by mechanical and maintenance of way forces, which, in the opinion of the managements on respective roads, should be added to the cost of material instead of to operating accounts. Conversely, the statements reemphasized a fact brought out in the preceding article that under modern storekeeping, stores expense is no longer the full measure of all the work performed by railway supply forces. Thus, while 81 per cent of the total operating cost of the purchasing and stores organization of one road in 1932 was included as stores expense, 19 per cent was excluded, although the stores expense account in the aggregate charged with expenses of other than supply forces were almost equal in amount to the expenses of the supply forces not included in stores expense.

Differences are also apparent in the classes of materials to which stores expense is added at the time of delivery on different roads, dependent largely upon the size of the road and on what materials are handled by the stores forces. Locomotive fuel, rails and ties are usually excluded in computing stores expense, these classes of material usually being handled separately from other materials, and receiving a separate charge for handling, which also varies with the road. On some roads, bridge and building materials and oil-house materials are also separated. On the other hand, some roads include both ties and rails in their figures. For these reasons and for the further reason that some roads value old material differently than others, the reported figures may differ. However, in this survey, they are understood to apply only to the general run of storehouse material, except where otherwise noted. The reports from the different roads are as follows:*

Akron, Canton & Youngstown

Stores Expense: 1925 to 1933—6.22, 6.36, 7.25, 7.01, 7.58, 7.38, 7.60, 8.64, 9.07. *Purchasing and Stores Charges:* Wages of storekeeper and stores laborers. Ice, water, light, etc., used by stores. *Other Charges:* Portion of accounting department salaries for pricing and for preparing material records. Portion of president's office expense assigned to purchasing. Labor of mechanical department for assisting stores. *Stores Work Not Charged:* None.

Alton

Stores Expense: 1925 to 1933—2.50, 2.31, 2.46, 2.10, 1.94, 2.08, 2.66, 3.52, 3.26. *Purchasing and Stores Charges:* Handling material. Waybilling. Lumber inspection. Materials' inspection and testing. Delivery of materials to roundhouses, car and locomotive shops. Cleaning store and shop grounds. Operating supply trains. Handling shop scrap. Operating grease reclamation plant. Operating oil-houses. Supplies. Percentage of purchasing department pay-rolls and office expenses. Insurance on stores facilities. Ties and rail are not handled by stores, being shipped direct. *Other Charges:* Heat, light and power. Storehouse switching. Handling supply cars in revenue trains. Labor of other departments for handling materials at outside stores. *Stores Work Not Charged:* Expense of purchasing partly charged to rails, ties, stationery and commissary. Proportionate cost of stores labor charged to mechanical department for joint handling and clerical work. Proportionate cost of auto truck charged to maintenance of way department for miscellaneous work.

*Each road's report is based on practice in effect in 1932. The figures are reported on a percentage basis. Figures for 1933 represent, in most cases, the stores expense for the first three months.

Atchison, Topeka & Santa Fe

Store Expense: 1925 to 1933—3.66, 3.60, 3.58, 3.88, 3.99, 4.37, 5.31, 4.86, 7.41. *Purchasing and Stores Charges:* Salaries and expenses of officers, clerks and attendants in purchasing department, general and division stores and stationery departments, engaged in purchasing, storing, distributing, handling and accounting for purchases and issues of materials and the concentration of scrap; also in general supervision of material reclamation, repair and manufacturing plants and ice-manufacturing plants under general supervision of purchasing department. Salaries and expenses of fuel, lumber and other inspectors in purchasing and stores departments. Wages and expenses of foremen, laborers, stockmen, material supervisors and supply car men in general, division and stationery stores. Supplies. Excludes cost of distributing, handling and accounting for fuel, ties and new rails. *Other Charges:* Office rent, heat, light, power, water, telephone, drayage, and repairs to handling equipment. Inspection of materials by mechanical department. Labor performed by other departments loading and unloading supply cars, handling scrap, etc., for stores departments. *Stores Work Not Charged:* Operation of reclamation plant by stores—charged to repairing and manufacturing material. Proportion of store pay-roll at reclamation plant—charged against reclamation plant. Operation of ice plants by purchasing department—charged to cost of ice. Purchasing and stores department do not operate tie plants, ice cars, test materials, distribute ties and rails, dismantle locomotives and cars or account for shop pay-rolls.

Bangor & Aroostook

Stores Expense: 1925 to 1933—4.69, 5.36, 5.84, 5.74, 7.25, 7.16, 7.23, 8.39, 8.50. *Purchasing and Stores Charges:* Pricing invoices. Accounting for disbursements. Waybilling. Handling and disbursing stationery. Scrap sales. Lumber inspection. Handling roadway scrap. Operating reclamation plant. Operating oil-house. *Other Charges:* None. Stores expense excludes cost of handling ties, rails, etc. *Stores Work Not Charged:* Generating acetylene—charged to shop expense. Delivering material to shops—charged to shop expense. Reclaiming materials —charged to stock.

Belt Railway of Chicago

Stores Expense: 1926 to 1933—5.05, 5.27, 5.86, 5.88, 6.14, 8.41, 6.08, 6.25. *Purchasing and Stores Charges:* All pay-roll charges. Operating company motor trucks. Material for use in purchasing and stores departments. Handling rail and ties. *Other Charges:* Heat, light and water—shop expense for stores work. *Stores Work Not Charged:* Stores handle safety work for railroad and divide expense. Manufacture of acetylene—charged direct. Sale of unclaimed freight charged to loss and damage.

Boston & Albany

Stores Expense: 1925 to 1933—3.13, 2.93, 3.43, 3.86, 3.71, 4.09, 4.28, 4.31, 4.36. *Purchasing and Stores Charges:* Pricing track, bridge and building material disbursements. Waybilling. Scrap sales. Inspecting and testing materials. Delivering materials to car and locomotive shops and along line of road. Operating supply train. Loading, unloading and handling scrap at store platform. Operating oil and waste reclamation plant. Preparing journal-box packing. Operating oil-house. Cutting up locomotives and cars. *Other Charges:* None. *Stores Work Not Charged:* None. Invoice vouching by accounting department charged to general expense. Disbursements accounting by maintenance of way department charged to maintenance of way. Disbursements accounting by maintenance of equipment department charged to maintenance of equipment. Disbursements accounting by commissary department charged to miscellaneous. Commissary handling by commissary department charged to maintenance of equipment. Accounting for shop pay-rolls by maintenance of equipment department charged to maintenance of equipment. Tie distribution by maintenance of way department charged to maintenance of way. Rail distribution by maintenance of way department charged to maintenance of way. Roadway scrap handling by maintenance of way department charged to maintenance of way. Tie and timber-treating plant operations by commercial firms added to cost of material. Storehouse repairs by maintenance of way department charged to maintenance of way. Car icing by transportation and main-

tenance of equipment departments charged to transportation. Locomotive and car dismantling by maintenance of equipment department charged to maintenance of equipment.

Boston & Maine

Stores Expense: 1927 to 1933—8.22, 7.79, 6.03, 6.55, 7.93, 9.66, 11.62. *Purchasing and Stores Charges:* Purchasing department—Placing store department orders for material. Checking invoices. Securing bids on quantity purchases. Securing credits on wrong material. Stores department—Keeping stock and ordering material. Shipping material. Delivering to car and locomotive shops. Taking inventories. Supplies and tools used at store headquarters. Operating trucks and tractors at store departments. Operating reclamation plant. Operating dry kiln. Operating oil-houses. Caring for laundry for bunk houses. Icing enginehouses. *Other Charges:* Accounting department—Pricing, auditing and recording invoices. Checking receipt of materials. Accounting for disbursements. Compiling receipts and issues by classes. Pricing and compiling inventories. Preparing material and performance statements. Operating department—Handling materials at enginehouses not having storekeepers. Handling materials at car-repair points. Proportion of chemists' expense. Heat and power. Telephone and telegraph department. Proportion of rent and janitor service in general office building. Proportion of expense of Ediphone bureau. Proportion of expense of safety and fire protection. *Stores Work Not Charged:* Tie and timber inspection charged to cross ties and lumber. Tie and timber-treating inspector charged to cost of materials at treating plant. Cost of purchasing coal—added to cost of coal. Switching cars at shops by tractor charged to shop expense. Mimeographing for other departments charged to stationery. Manufacturing at reclamation plant added to cost of material. Handling scrap at reclamation plant charged to scrap sales. Dismantling locomotives and cars charged to retirements.

Central Vermont

Stores Expense: 1925 to 1933—6.36, 6.03, 6.24, 7.20, 7.53, 8.34, 8.18, 9.90, 10.34. *Purchasing and Stores Charges:* Pricing invoices. Vouchering invoices. Accounting for disbursements. Handling and disbursing stationery. Handling supplies for motor coaches. Scrap sales. Lumber inspection. Delivering all material to car and locomotive shops and enginehouses. Delivering material to locomotives. Handling roadway and shop scrap. *Other Charges:* Material handling at outside points handled by bridge and building department. Material handling at enginehouses handled by maintenance of equipment department. Proportion of heat and light used by car and motive departments. Proportion of shop shifter expense of transportation department. Proportion of telegraph expense of despatcher's office. *Stores Work Not Charged:* None.

Chicago & Eastern Illinois

Stores Expense: 1925 to 1931—5.20, 4.68, 4.27, 6.34, 5.66, 6.43, 6.98. *Purchasing and Stores Charges:* Pay-roll of purchasing and stores departments. Heat, light, water, stationery and material inspection. *Other Charges:* Labor charges from locomotive department. Proportion of expenses of general offices. Proportion of expense of switch engine; also proportion of expense of station agent. *Stores Work Not Charged:* Labor and maintenance of mechanical facilities used in material handling. Also labor for handling waste paper.

Chicago & Illinois Midland

Stores Expense: (1925 to 1932—av.) 10.34, (1933) 13.97. One per cent is added to cost of rail, ties and fuel, and five per cent to material for additions and betterments.

Chicago & North Western

Stores Expense: 1929 to 1933—6.45, 6.77, 8.58, 9.74, 10.73. *Purchasing and Stores Charges:* Pricing invoices. Preparing invoices for vouchering. Pricing requisitions for material issued. Waybilling company materials. Handling stationery. Stationery used in stores department. Operation of and repairs for duplicating and calculating machines used by stores. Operating scrap yard, preparing scrap records and collecting scrap bills. Lumber inspection by storekeepers. Delivering material over counter for shops, enginehouses, locomotives and cabooses. Delivering materials by auto truck. Loading roadway and shop scrap for shipment to scrap yards. Operating oil-houses. Cleaning stores and material yards and stores equipment. Stocking supply cars and issuing materials en route. Traveling expenses of store men. Light, heat, power and telephone service used by stores. Proportionate expenses of gate and watchmen employed by stores at Chicago shops. Keeping time of stores department. Repairs to stores equipment. Issuing and recording orders for stocks manufactured by shops. Purchasing supplies other than stationery and fuel. Inspecting ties and lumber. Traveling expenses of purchasing department. Purchasing stationery and supplies. *Other Charges:* Material handling by bridge and building, car and locomotive departments. Proportionate expense of locomotive department for heating supply departments. Switching at yards and storehouses by transportation department. Vouchering of all supplies except coal by accounting department. Expense of testing department for inspecting supplies other than lumber. *Stores Work Not Charged:* Operation of reclamation plant added to cost of materials affected. Services of gate and other watchman at Chicago shops—prorated. Delivery of material in car-repair yard, Chicago—charged to car repairs. Cleaning freight cars at Chicago transfer—charged to train expenses. Operating rail mill and lumber saw mills—charged to operating expenses. Unloading engine sand—charged to "other supplies" for locomotives. Handling scrap locomotive brass and filling orders at foundry—added to price. Purchasing fuel—included in disbursement price. Inspecting coal—included in coal price.

Chicago, Burlington & Quincy

Stores Expense: 1925 to 1933—6.70, 6.50, 6.60, 5.80, 5.20, 6.10, 7.40, 7.50, 9.40. *Purchasing and Stores Charges:* Salaries and expenses of purchasing and stores employees. Supplies used by purchasing and stores employees. Pricing invoices. Pricing and classifying requisitions. Lumber inspection. Delivery of material from car and locomotive shops to stores. Supplies for machinery used in material yards. Operating oil-houses. *Other Charges:* Material inspecting and tests by test department. Material handling by maintenance of equipment department at points without storekeepers. Switch-engine expense at storehouses. Proportion of power-plant expense. *Stores Work Not Charged:* Delivering materials to enginehouses—charged direct. Delivering materials to car and locomotive shops—charged direct. Delivering ice to passenger cars—charged direct. Operating oil-reclamation plants—charged direct. Operating lumber re-saw mills—charged direct. Operating dry kilns—charged direct. Operating stone quarry—charged to material account. Operating repair and reclamation plant—charged to material account. Operating rail mills—charged direct. Operating water pumps—charged direct. Hauling by truck for other departments—charged direct. Dismantling locomotives and cars—charged direct. Reclaiming journal compound for locomotives—charged direct. Splitting wood for firing locomotives—charged direct. Reclaiming car oil and packing—charged direct.

Chicago, Milwaukee, St. Paul & Pacific

Stores Expense: 1925 to 1932—7.84, 8.46, 7.94, 9.14, 10.14, 10.08, 11.30, 11.47. *Purchasing and Stores Charges:* Purchasing and stores department pay-roll charges. Purchasing and stores department personal expenses. Material and supplies for purchasing and stores departments. Rent for offices occupied by purchasing department. *Other Charges:* Pay-roll charges from locomotive and car departments. Pay-roll charges from roadway material shops. Pay-roll charges from other departments. Power-plant expense and shop expense. Cost of switching at stores. *Stores Work Not Charged:* Labor for maintenance of way department. Labor for maintenance of way department. Labor for maintenance of equipment department. Labor for transportation department. Purchasing and handling stationery. Purchasing and inspecting ties. Manufacture of material at shops. Handling scrap at concentration points. Purchasing of fuel. Miscellaneous.

Chicago, Rock Island & Pacific

Stores Expense: 1925 to 1933—6.14, 5.70, 5.49, 5.61, 5.32, 6.51, 8.74, 11.15, 10.41. *Purchasing and Stores Charges:* Purchasing pay-rolls less 5 per cent charged to sale of scrap and 10 per cent charged to locomotive fuel. Store pay-rolls for handling and disbursing materials. Traveling expenses of purchasing and stores departments. Office supplies. *Other Charges:* Heat, light, water and power used by supply department. Expense of test department, exclusive of office force and expense of testing at plant of consignee. Proportionate expense of employees' train in Tri-Cities (Rock Island, Davenport and Moline). Switching for store department. Taking inventory on divisions and at shops. Fire protection. Material handling at certain points by maintenance of way department. Proportion of power-plant expense. *Stores Work Not Charged:* Handling stationery—prorated to expenses of departments benefited. Delivering material to enginehouses and shops—charged to shop expense. Operating repair and reclamation plants—added to cost of materials affected. Operating oil-reclamation plants—added to cost of oil. Supplying engines and cabooses where performed by stores—charged to train supplies. Handling scrap at docks—scrap, labor and 5 per cent of purchasing pay-roll charged to

M. & S. account. Shop fuel handled by store—charged to shop expense. Fuel purchasing—10 per cent of purchasing pay-roll charged to fuel accounts.

Colorado & Southern

Stores Expense: 1925 to 1933—6.39, 4.75, 4.31, 4.04, 4.12, 4.79, 6.54, 7.51, 12.05. *Purchasing and Stores Charges:* Pricing invoices. Scrap sales. Lumber inspections. Handling roadway scrap. Handling shop scrap. Operating oil-houses. Pricing requisitions. Unloading material. Checking and approving invoices. Preparing purchase requisitions. Maintaining stock books. Checking line stocks. Billing for material sold. Shipping to outside points. Delivering by truck to freight house and substores. Purchasing material. Vouchering invoices. Maintaining record of all purchases. Operating crane and tractors. *Other Charges:* Proportionate expense of maintenance of equipment department for heat, light and power. Night delivery of material by roundhouse foremen. Inspection of wheels and castings. Storehouse operation by maintenance of equipment department at Trinidad, Colo. Material accounting by accounting department. *Stores Work Not Charged:* Delivering materials to roundhouses, car and locomotive shops—charged to shop expense. Loading ties and rails—charged to operating expense. Handling stationery—charged to stationery store expense. Inspecting cross ties—charged to M. & S. account. Icing cars charged to operating expense.

Columbus & Greenville

Stores Expense: 1925 to 1933—6.04, 6.28, 6.65, 6.60, 7.18, 7.15, 9.12, 10.86. *Purchasing and Stores Charges:* Pricing invoices. Vouchering invoices. Accounting for disbursements. Handling and disbursing stationery. Delivering material to roundhouses and shops. Cleaning shop and station grounds. Handling roadway and shop scrap. Operating oil-reclamation plants. Operating oil-houses. *Other Charges:* None. *Stores Work Not Charged:* None. Figures include rail and ties.

Delaware & Hudson

Stores Expense: 1925 to 1933—7.54, 6.95, 6.72, 7.83, 6.84, 5.48, 8.58, 11.01, 10.33. *Purchasing and Stores Charges:* Purchasing department—91 per cent of all expenses except cost of tie inspectors. Purchase of all material except fuel, commissary, rail, ties and equipment. Originating purchase orders. Check invoice prices. Selling scrap. Preparation of purchasing pay-roll. Stores department—All expenses except as noted in Group 4. Handling all materials except fuel, commissary, ties, rails and special stationery. Maintaining card records of material. Originating purchase requisitions. Inspecting and checking material received. Waybilling. Grading and preparing roadway and shop scrap received at scrap yards. Preparing reports of material received and issued. Delivery of material to shops—not furnished. *Other Charges:* Storekeeping by car, locomotive, signal bridge and building departments at certain points. Heat, light, water and proportionate general office expense. Cost of operating supply train. *Stores Work Not Charged:* Fuel purchasing—7 per cent of purchasing department expense charged to fuel accounts. Commissary buying—2 per cent of purchasing department expense charged to commissary. Inspecting ties—charged to price of ties. Manufacture of steel tires by store department charged to materials manufactured. Inspecting, harvesting and handling ice by stores—charged to ice accounts.

Delaware, Lackawanna & Western

Stores Expense: 1925 to 1932—4.14, 3.96, 3.97, 3.60, 3.45, 3.64, 4.32, 3.85. *Purchasing and Stores Charges:* Pay-roll and supplies for general purchasing and distributing of supplies handled by stores. Excludes purchase and handling of rails, ties, track material, bridge and building supplies, fuel and dining-car supplies, the expenses being charged to superintendent accounts. *Other Charges:* None. *Stores Work Not Charged:* Cost of buying and handling roadway materials, such as rails, ties, track material and bridge and building-department supplies; also fuel and dining car supplies. The expense for above items is charged to the superintendence accounts under maintenance of way, maintenance of equipment and miscellaneous operations.

Detroit, Toledo & Ironton

Stores Expense: 1925 to 1933—4.88, 6.92, 7.67, 8.06, 6.49, 7.78, 11.53, 10.20, 7.78. *Purchasing and Stores Charges:* Pay-rolls and expenses of purchasing and stores departments. Heat, light, telephone and supplies used and office rentals. *Other Charges:* Material handling labor by signal, bridge and building and track departments. Watchman. Handling material by work train. *Stores Work Not Charged:* None. Pricing requisitions and invoices, accounting for disbursements, mimeographing and accounting for shop pay-rolls are handled by accounting department and charged to Primary Account 452. Cleaning of shop and station grounds is performed by maintenance of equipment and maintenance of way departments and charged to Primary Accounts 727 and 373. Cross ties and rails are distributed and roadway scrap handled by maintenance of way department and charged to Accounts 220 and 202. Storehouse repairs by maintenance of way department charged to Account 235. Locomotives and cars are dismantled by maintenance of equipment department and charged to retirements.

Detroit & Toledo Shore Line

Stores Expense: 1930 to 1933—2.94, 4.35, 6.76, 6.48. *Purchasing and Stores Charges:* All expenses of stores department, including cost of handling second-hand rail and all ties. Purchasing of material and sale of scrap excluded, being handled by general manager's staff. *Other Charges:* Time of maintenance of way employees handling material and scrap for stores. *Stores Work Not Charged:* None.

Fort Worth & Denver City

Stores Expense: 1925 to 1933—5.78, 5.81, 4.29, 5.32, 3.87, 3.88, 6.27, 6.16, 6.00. *Purchasing and Stores Charges:* Ordering and purchasing materials. Checking and vouchering invoices. Pricing requisitions. Handling and disbursing stationery. Scrap sales. Delivering material to roundhouses and shops. Operating supply cars. Handling scrap received by store. Operating oil-houses. *Other Charges:* None. *Stores Work Not Charged:* Scrap handling—prorated to accounts credited. Rail handling—charged to cost of rails. Rail straightening—charged to rail account. Fuel-oil handling—charged to cost of oil.

Georgia

Stores Expense: (1925 to 1932—av.) 6.78, (1932) 7.30, (1933) 6.10. *Purchasing and Stores Charges:* All purchasing and stores department costs, consisting of receiving, handling, and disbursing materials, pricing invoices, vouchering invoices, accounting for disbursements, handling scrap, inspecting material and selling scrap. *Other Charges:* None. *Stores Work Not Charged:* None.

Grand Trunk Western

Stores Expense: 1925 to 1933—6.68, 8.61, 7.84, 7.64, 6.62, 7.93, 10.19, 16.46, 13.70. *Purchasing and Stores Charges:* Purchasing and handling materials. Pricing and vouchering invoices. Accounting for disbursements. Waybilling. Handling and disbursing stationery and commissary. Scrap sales. Materials inspection and tests. Duplicating. Repairing typewriters and other office machines. Delivering material to roundhouses, car and locomotive shops. Operating supply cars. Handling roadway and shop scrap and stores department yard. Operating oil-houses. *Other Charges:* Material handling by maintenance of equipment department at points without storekeepers. Shop switching engines. *Stores Work Not Charged:* Handling supplies for motor coaches. Accounting for shop pay-rolls—charged to Account 301. Distributing rails and ties to line of road. Operating repair and reclamation plants—charged to accounts benefited. Repairs to stores facilities by bridge and building department—charged to accounts benefited.

Gulf Coast Lines

Stores Expense: 1927 to 1931—5.06, 5.11, 5.04, 5.14, 5.11. *Purchasing and Stores Charges:* Purchasing and stores pay-roll and traveling expenses. Stationery. Supplies, rent, light and telephone. Pricing and vouchering invoices. Accounting for disbursements. Waybilling. Scrap sales. Operating supply trains. Handling roadway and shop scrap. Operating oil-houses. *Other Charges:* Switching. Labor for handling material by other departments. *Stores Work Not Charged:* Handling and disbursing of commissary by stores—charged to operating accounts. Operation of reclamation plant by stores—charged to M. & S. account and operating expenses. Supplying cabooses—charged to operating expenses. Handling and disbursing of stationery by purchasing department—charged to stationery store expenses. Multigraphing and duplicating by purchasing department—charged to stationery stock. Repairing of typewriters and office equipment by purchasing department—charged to operating expense. Lumber inspection by purchasing department—charged to M. & S. Account. Cross-tie and fuel purchasing by purchasing department—charged to ties and fuel. Operation of tie and timber plant by purchasing department—charged to M. & S. Account.

Illinois Central

Stores Expense: 1925 to 1933—6.30, 5.60, 6.60, 6.40, 5.80, 6.60, 6.60, 5.69, 6.52. *Purchasing and Stores Charges:* Pur-

chasing materials and supplies. Handling and disbursing materials and supplies. Vouchering invoices. Accounting for disbursements. *Other Charges:* None. *Stores Work Not Charged:* Multigraphing and other duplicating—charged to stationery and printing accounts. Repairing typewriters and office machines—charged to stationery and printing. Lumber inspection—charged to value of material affected. Materials inspection and tests. Delivering material to roundhouses, car and locomotive shops—charged to shop expense. Handling shop and roadway scrap—charged to scrap account.

Kansas City Southern

Stores Expense: 1925 to 1933—7.57, 6.57, 6.26, 6.41, 5.99, 6.55, 6.99, 7.93, 10.56. *Purchasing and Stores Charges:* Checking and vouchering invoices. Accounting for disbursements. Scrap sales. Lumber inspection. Operating supply trains. Handling shop scrap. Operating oil-houses. *Other Charges:* Water, heat, light and telephone. Switching at stores. Labor for handling store material. Bond premium. *Stores Work Not Charged:* Separate purchasing, handling and accounting for ties and timber, coal and fuel oil. Stationery, commissary supplies, rails, track, bridge and building material—added to cost of material affected.

Lehigh & New England

Stores Expense: 1925 to 1933—6.96, 8.19, 6.86, 7.90, 7.80, 5.75, 13.76, 9.74, 9.87. *Purchasing and Stores Charges:* Purchasing material and supplies. Pricing invoices. Accounting for disbursements. Waybilling. Handling and disbursing stationery. Scrap sales. Lumber inspection. Materials inspection and tests. Delivering materials to roundhouses, car and locomotive shops. Handling roadway and shop scrap. Operating repair and reclamation plants. Operating manufacturing plants. Operating oil-houses. *Other Charges:* Material and scrap handling by maintenance of equipment department. *Stores Work Not Charged:* None.

Lehigh Valley

Stores Expense: 1925 to 1933—3.54, 3.71, 4.11, 4.52, 4.61, 5.09, 5.30, 7.03, 7.34. *Purchasing and Stores Charges:* Pricing and vouchering invoices. Accounting for disbursements. Handling and disbursing stationery. Duplicating work. Scrap sales. Lumber inspection. Materials inspection and tests. Delivering materials to roundhouses and shops. *Other Charges:* Switching at stores. Light, heat and power. Charging electric batteries. *Stores Work Not Charged:* Operating repair and reclamation plants—charged to M. & S. Account. Operating oil-reclamation plants—charged to M. & S. Account. Operating oil-houses—charged to transportation—enginehouses. Dismantling locomotives and cars—charged to retirements.

Louisiana, Arkansas & Texas

Stores Expense: 11.06 (1932), 9.19 (1933). *Purchasing and Stores Charges:* Percentage of salary and expenses of executives in charge. Pay-roll of stores forces devoted to storekeeping. Miscellaneous office expenses. Maintenance and operation of fuel station. Supplies and rent. Percentage of expense of purchasing office joint with L. & A. *Other Charges:* Prorated cost of maintenance of way timekeeper for accounting. *Stores Work Not Charged:* Time of executive prorated 50 per cent to other work done. Storekeeper's time inspecting ties charged to cost of ties. Time of store attendant prorated to operating air compressor. Time of truck driver prorated 25 per cent to Account 452—mail. Time of porter charged 10 per cent to stationery and 90 per cent to general office. Executive office rent charged 17 per cent to stationery. Cost of handling rail and ties charged separately.

Louisville & Nashville

Stores Expense: 7.55 (1931), 8.11 (1932). *Purchasing and Stores Charges:* Salaries and expenses of general and other stores and stationer. Filling requisitions. Shipping materials. Unloading materials. Storing materials. *Other Charges:* Loading and unloading stores material by other departments. *Stores Work Not Charged:* Salaries and expenses of general purchasing agent and office force for purchasing all materials and supplies are cleared monthly to appropriate accounts on basis of issues for a previous representative period. One-half per cent added to cost of rail and cross ties for stores expense.

Minneapolis, St. Paul & Sault Ste. Marie

Stores Expense: 1925 to 1932—7.00, 8.50, 9.00, 9.00, 9.00, 9.00, 10.00, 10.00. *Purchasing and Stores Charges:* Pricing and vouchering invoices. Accounting for disbursements from storehouses. Scrap sales. Lumber inspection and handling. Materials inspection and testing. Delivery of material to roundhouses, car and locomotive shops. Operating supply trains. Handling roadway and shop scrap. Operating oil-houses. Control of central ice-storage houses. *Other Charges:* Heat, light and power. Track labor for repairing track materials. *Stores Work Not Charged:* Commissary purchasing—charged to commissary department. Fire inspector—charged to maintenance of way supervision. Tie inspectors charged to tie-inspection account. Insurance and stationery clerks—charged to general office and stationery. Fuel inspectors—charged to fuel. Handling of fuel records by stores—charged to fuel. Time-keeping for maintenance of equipment department at road points—charged to maintenance of equipment. Handling of freight charges to legal department. Handling of second-hand in rail yard—charged to department benefited. When ties are reshipped from treating plants to roadmasters a charge is made of one-half of one per cent to cover accounting. When ties are shipped direct to roadmasters from points of production, the invoice is taken up direct by division superintendent and inspection and purchasing expense is charged at the rate of two cents on each tie and credited to the tie inspection clearing account. New rail is shipped direct to point of usage and the invoice taken up direct by superintendent who allows a credit to stores department of one-half of one per cent to cover purchasing. Some second-hand rail is carried in storekeeper stock but when it is shipped to roadmasters, the actual loading charges are assessed.

Missouri & North Arkansas

Stores Expense: 1928 to 1933—11.22, 8.24, 10.25, 12.94, 14.57, 14.63. *Purchasing and Stores Charges:* Pricing and vouchering invoices. Accounting for disbursements. Handling and disbursing stationery. Scrap sales. Operating supply trains. Handling roadway and shop scrap. Operating oil-houses. *Other Charges:* Maintenance of equipment labor for handling store material. *Supply Work Not Charged:* Flat charge made to fuel stock for fuel purchasing.

Missouri Pacific

Stores Expense: 1925 to 1933—4.70, 5.21, 4.33, 3.92, 3.64, 4.31, 5.98, 7.02, 7.58. *Purchasing and Stores Charges*—Pricing and vouchering invoices. Accounting for disbursements. Scrap sales. Lumber inspection. Handling roadway and shop scrap. Operating oil-houses. Supplies. Traveling expenses. Operating auto trucks and tractors. Handling storehouse materials. *Other Charges*—Light, heat, power and telephone. Maintenance of equipment labor for loading and unloading storehouse materials. Switching. *Stores Work Not Charged*—Timekeeping for shop forces by store department—charged to maintenance of equipment. Material deliveries by store department for other departments—charged to various accounts. Expense of purchasing cross ties, fuel and stationery—charged to cost of material.

Nashville, Chattanooga & St. Louis

Stores Expense: 1925 to 1933—4.70, 5.00, 5.50, 5.30, 5.00, 5.50, 5.70, 6,90, 6.10. *Purchasing and Stores Charges to Stores Expense*—Wages of purchasing and stores department. Supplies for store operations. Scrap sales. Lumber inspection. Materials inspection and test. Delivery of material to car shops. Handling roadway scrap at scrap dock and general storage of shop scrap. Dismantling locomotives and cars. *Other Charges to Stores Expense*—Wages of switch engine and other expense for handling stores material. Heat, power, light, telephone and telegraph. *Stores Work Not Charged*—Pricing and vouchering invoices and accounting for disbursements by accounting department—charged to Account 453. Waybilling. Handling and disbursing of stationery by stations—charged to operating accounts. Handling and disbursing of commissary by commissary agent—charged to operating accounts. Multigraphing and other duplicating—charged to Account 453. Delivery of materials to roundhouses and locomotive shops—charged to shop expense. Handling shop materials—charged to shop expense. Cleaning shops and shop yards—charged to shop expense. Operating repair and reclamation plants—charged to operating accounts. Operating manufacturing plants—charged to prices of materials. Operating oil-houses—charged to operating accounts. Repairs to buildings and facilities—charged to operating accounts.

New York, Chicago & St. Louis

Stores Expense: 1929 to 1932—5.17, 5.47, 7.67, 8.66. *Purchasing and Stores Charges*—All pay-rolls of store department, including clerks in general store. Traveling expenses of purchasing agent, storekeepers, lumber inspectors. Supplies used. Pricing and vouchering invoices. Accounting for disbursements for transportation departments. Pricing and billing maintenance of equipment departments for material issued. Preparing all reports. Accounting for store pay-rolls. Handling scrap sales,

except rail, and making scrap report. Handling and disbursing stationery. Operating scrap yard and reclamation plant. Operating cost of trucks and tractors and cranes in stores work. Percentage of purchasing department pay-roll. *Other Charges*—Heat, light, power, telephone and rent. Percentage of general officers' and chief clerks' pay-rolls. Percentage of maintenance of equipment labor for handling stores at outside points. Cost of crews, fuel and other supplies for storehouse switching. *Stores Work Not Charged*—Operation of bolt repair shop by stores—charged to bolts. Icing of cars by stores at one point—charged to operating account. Dismantling of locomotives and cars by stores—charged to maintenance of equipment department. Operation of grain door reclamation plant by stores—added to cost of doors. Ties and rails distributed by maintenance of way department. Roadway scrap loaded and shipped to stores by maintenance of way department. Scrap rails sold direct by maintenance of way department. Journal packing reclamation performed by commercial firm—charged to M. & S. account.

New York, New Haven & Hartford

Stores Expense: 1925 to 1933—3.84, 3.72, 4.33, 4.80, 4.06, 4.31, 5.02, 5.14, 4.85. *Purchasing and Stores Charges:* Pricing and vouchering invoices. Accounting for disbursements. Waybilling and vouchering freight bills. Lumber inspection. Delivering material to shops. Operating of reclamation plant. Unloading and shipping materials. Supplies used at storehouses. *Other Charges*—Heat, light, telephone and watchman. Switching service. Trucking bills. Repairs to tractors. Handling of material by maintenance of equipment department. Inspection of material by test department. *Stores Work Not Charged*—Purchasing fuel—charged to fuel. Purchasing cross ties—charged to cross ties. Purchasing and handling stationery—added to cost of stationery.

Northern Pacific

Stores Expense: 1928 to 1932—7.20, 7.07, 7.35, 8.53, 6.31. *Purchasing and Stores Charges:* Unloading, unpacking, storing and shipping materials. Invoicing and waybilling. Ordering material. Checking and certifying invoices. Purchasing material. Repairs to office machines. Operating oil-houses. *Other Charges*—Storehouse switching. Supply-train operation. *Stores Work Not Charged*—Delivering material to shops—charged to shop expense. Operating reclamation plants. Cleaning shop grounds. Operating dry kilns. Operating oil-reclamation plants. Dismantling locomotives.

Pennsylvania

Stores Expense: 1925 to 1932—5.00, 4.70, 4.40, 4.00, 3.40, 3.80, 4.10, 4.60. *Purchasing and Stores Charges:* Purchasing department pay-roll and expenses. Stores department pay-roll and expenses. Stores department—divisions and shops—pay-rolls and expenses. Heat, light, power, telephones, rentals, etc. Materials and supplies used. *Other Department Charges*—Switching charges. Trucking and drayage expense. Supply-train charges. *Stores Supply Work Not Charged.* Cost of purchasing and handling stationery is kept separately in stationery store expense pool and charged to appropriate operating expense—primary accounts—stationery.

Note—The cost per $100 of material reported is purely a statistical figure representing the relationship of the expense incurred in purchasing and storekeeping operations, to the value of material used, in which rails and ties are included. No attempt is made to give a store expense rate as used in storekeeping practice, for the reason that each of the general divisions or shops has its own stores expense clearing account and changes the stores expense rate from month to month, as it becomes necessary, in order to adjust the account.

Seaboard Air Line

Stores Expense: 1925 to 1933—5.89, 6.35, 7.79, 8.41, 6.22, 6.87, 6.65, 7.19, 6.69. *Purchasing and Stores Charges:* Purchasing, receiving, storing and issuing materials. Pricing and vouchering invoices. Scrap sales. Inspection of lumber. Inspection and tests of materials. *Other Charges:* Shop labor for handling material for stores. Wages for supply-train operation. *Stores Work Not Charged:* Accounting for disbursements—charged to general expense. Waybilling—charged to transportation. Handling and disbursing stationery—charged to stationery store expense. Duplicating for other departments—charged to operating expense. Repairs to typewriters—charged to accounts benefited. Accounting for shop pay-rolls—charged to general expense. Delivery of materials to shops not performed. Shop transportation—charged to shop expense. Distributing ties and rails—charged to maintenance of way and structures. Handling roadway scrap—charged to maintenance of way and structures. Handling shop scrap—charged to maintenance of equipment. Operating repair and reclamation plants—charged through clearing account to maintenance of equipment and maintenance of way. Operating manufacturing plants—charged to cost of materials made. Operating tie and timber plants—charged to cost of materials treated. Operating mills, kilns, carpenter shops and oil-reclamation plants—charged to maintenance of equipment and maintenance of way and structures. Repairs to facilities—charged to maintenance of equipment and maintenance of way and structures. Icing cars—charged to transportation. Dismantling locomotives and cars—charged to maintenance of equipment.

Southern Pacific—Pacific Lines

Stores Expense: 1925 to 1933—8.00, 8.00, 9.00, 8.00, 8.00, 8.00, 10.00, 8.50, 9.00. *Purchasing and Stores Charges:* Salaries and expenses of purchasing and stores departments for purchasing and handling supplies. Pricing and vouchering invoices. Multigraphing and other duplicating for supply work. Repairing typewriters for supply work. Handling scrap. Operating supply trains. Operating oil-houses. Life insurance premiums. Supplies, Store trucking. Containers used for shipments. *Other Charges:* Police and watchmen. Switching at stores. Heat and power. Material handling by maintenance of equipment department. Operation of supply train. *Stores Work Not Charged:* Delivering material to roundhouses, car and locomotive shops—charged to operating expenses. Moving materials for shops—charged to operating expenses. Maintaining fire roads—charged to operating expenses. Handling and distributing ties and new rails—Added to cost of ties and rails. Charge of 0.5 per cent added to issues of new rail and ties for purchasing. Handling second-hand and scrap rails—charged to operating expenses. Handling ice to storage—added to cost of ice. Handling fuel and preparing fuel reports—charged to cost of fuel. Operating dry kilns—added to cost of lumber. Operating cabinet shop—added to cost of products. Operating reclamation plant—charged to operating expenses. Automotive equipment repair shop—charged to operating expenses. Operating oil and waste reclamation plant—charged to operating expenses. Auto trucking for other departments—charged to operating expenses. Unloading locomotive sand—charged to operating expenses. Dismantling locomotives and tenders—charged to operating expenses. Operating wood mill for maintenance of way and structures work—charged to cost of product. Equipping cabooses, locomotive and yard boxes—charged to operating expenses. Handling mail for other departments—charged to operating expenses. Waybilling Company material—charged to operating expenses. Handling salt at water softening plants—charged to operating expenses. Cleaning lamps and lanterns for train service—charged to operating expenses.

Spokane International

Stores Expense: 1925 to 1932—8.11, 10.70, 13.10, 13.20, 11.40, 16.10, 17.40, 20.38. *Purchasing and Stores Charges:* Cost of purchasing and handling car and locomotive materials, track materials. *Other Charges*—None. *Stores Work Not Charged*—Accounting for shop pay-rolls. Accounting for maintenance of equipment property changes. Cost of tie inspection. Percentage of purchasing pay-rolls.

Spokane, Portland & Seattle

Stores Expense: 1925 to 1932—9.34, 9.40, 8.64, 8.70, 9.35, 10.09, 13.34, 15.17. *Purchasing and Stores Charges:* Salaries and expenses of purchasing agent and office. Salaries and expenses of storekeepers and offices. *Other Charges:* Watchman service. *Stores Work Not Charged:* Lumber inspection—added to cost of lumber and ties. Percentage of store department expense for agency work—charged to station employees.

Wabash

Stores Expense: 1925 to 1933—6.50, 6.20, 7.10, 6.50, 5.60, 6.80, 7.70, 7.90, 9.10. *Purchasing and Stores Charges:* Purchasing and stores department pay-rolls, including force for material accounting. Supplies. Drayage and trucking. Inspection of lumber, except cross ties. *Other Charges:* Switching. Heat, light, telephone and water. Bridge tolls. Supply-train operation. Material handling by other departments at points without storekeepers. *Stores Work Not Charged:* Purchasing, inspecting and distributing coal—charged to fuel account. Purchasing, inspecting and treatment of cross and switch ties—charged to ties. Purchasing, inspecting, handling and selling of rails—charged to rail account. Delivery of material to shops—charged to shop expense. Clerical work for maintenance of equipment department at small points—charged to operating expenses. Purchasing and handling stationery—charged to stationery stores expense. Waybilling—charged to operating expenses.

Note—The increase of 1932 over 1931, also the higher rate for the first three months of 1933, is due to a considerable amount

of material being obtained from dismantled equipment which was taken into stock and issued at less than new value, which had the tendency to increase the rate of expense to material issued.

Western Maryland

Stores Expense: 1930 to 1933—5.09, 6.16, 5.97, 7.01. *Purchasing and Stores Charges:* Purchasing materials. Handling shop scrap. Receiving and distributing materials. *Other Charges:* Loading and unloading materials. Switching store materials. Fuel for cranes. *Stores Work Not Charged:* Handling shop tools and supplies—charged to shop expense. Oiling machinery—charged to shop expense. Operating cranes—charged to shop expense.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended September 9, which included the Labor Day holiday, amounted to 571,387 cars, a decrease of 95,265 cars as compared with the week before the holiday but an increase of 69,850 cars as compared with the corresponding week of last year. Loading of l.c.l. merchandise and grain and grain products showed decreases as compared with last year, while other commodity classifications showed increases. All districts except the Southern showed increases as compared with last year but all showed decreases as compared with 1931. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week ended Saturday, September 9, 1933

Districts	1933	1932	1931
Eastern	124,881	105,317	141,167
Allegheny	117,225	89,924	135,284
Pocahontas	41,534	36,977	45,844
Southern	75,970	77,365	94,777
Northwestern	84,018	65,285	94,159
Central Western	82,733	82,166	101,293
Southwestern	45,026	44,503	55,226
Total Western Districts	211,777	191,954	250,678
Total All Roads	571,387	501,537	667,750
Commodities			
Grain and Grain Products	26,804	35,870	33,572
Live Stock	18,736	18,150	23,733
Coal	109,342	89,359	112,266
Coke	6,838	3,140	4,658
Forest Products	22,260	15,556	24,181
Ore	34,696	6,125	30,265
Mdse. L. C. L.	148,156	150,032	187,248
Miscellaneous	204,555	183,305	251,827
September 9	571,387	501,537	667,750
September 2	666,652	561,325	759,325
August 26	631,998	537,767	763,551
August 19	634,845	518,440	748,600
August 12	622,759	511,965	743,626
Cumulative total, 36 weeks	19,457,210	19,168,184	26,463,345

Car Loading in Canada

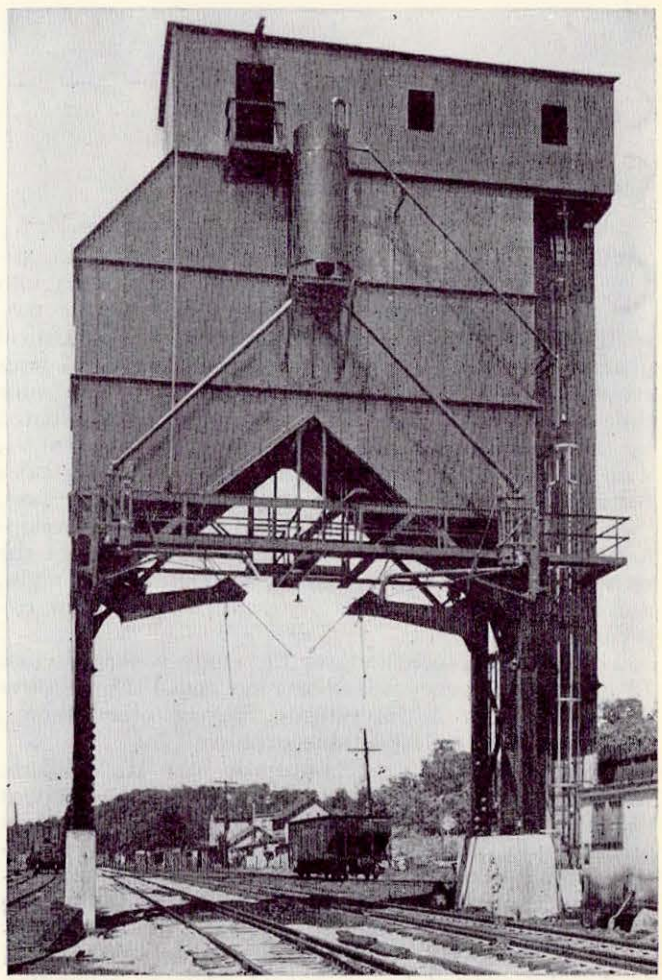
Owing to the holiday on September 4, car loadings in Canada for the week ended September 9 amounted to only 41,027 cars, a decrease from the previous week's loadings of 4,519 cars, and the index number of the Dominion Bureau of Statistics declined to 65.19 from 70.20.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
September 9, 1933	41,027	18,442
September 2, 1933	45,546	19,941
August 26, 1933	41,887	19,525
September 10, 1932	44,278	15,832
Cumulative Totals for Canada:		
September 9, 1933	1,305,357	655,264
September 10, 1932	1,467,623	686,465
September 5, 1931	1,733,688	935,923

Use Wrought Iron Plates in Coaling Plant

THE Missouri Pacific has recently completed a mechanical coaling station at Myrick, Mo., of 150 tons storage capacity, that embodies unusual structural features. The superstructure is entirely of metal but instead of employing structural steel throughout, genuine wrought iron, from No. 8 gage to ⅜ in. in thickness, was used for all plates, including those for the sides of the bin and the elevator leg, the floors of the bin and the monitor, as well as the roof. Furthermore, provision has been made for a maximum realization of the greater service life assured by the use of this material by the adoption of a design that facilitates dismantling and re-erection at another location. The sides of the bin and the monitor are made up in four tiers of horizontal panels from 8 ft. 6⅛ in. to 10 ft. deep, with heavy flange angles at the top and bottom that not only afford structural stiffness but also a ready means of connecting and disconnecting the panels.

The bin structure is 34 ft. 2½ in. by 12 ft. 1½ in. in plan, inside dimensions, and is supported on four columns so as to span two tracks spaced 14 ft. center to center. Coal is delivered on a flanking track equipped with a reinforced concrete track hopper provided with 15-in. 108-lb. wide-flange beams to carry the track rails, and breaker bars. Coal is fed from the track hopper to an elevating bucket conveyor by an automatic reciprocating feeder 30 in. wide that has a capacity of 60 tons per hr. at 25 strokes per min. The conveyor



The New Coaling Station on the Missouri Pacific at Myrick, Mo.

is equipped with 20-in. by 30-in. wrought iron buckets 10 in. deep, mounted on a high-carbon steel roller chain. The vertical run is housed in a shaft, 4 ft. ½ in. by 6 ft. 6½ in. in plan, that extends up to the monitor, where the coal is dumped by gravity on a two-way wrought iron discharge chute over the storage bin. The coal-handling equipment is operated by a 15-hp. electric motor operating on 3-phase 60-cycle, 220-volt current. The controls include overload protection of the temporary overload relay type and a push button for starting and stopping. The bin is equipped with two side-cut gates and aprons for the delivery of coal to locomotives on the two tracks.

Wet-sand storage and a dryer are provided at track level and the dry sand is delivered through a 2½ in. extra-heavy, wrought steel pipe with malleable fittings to a dry-sand tank mounted on a bracket outside the bin. This tank, which has a capacity of 5 tons, is also of wrought iron and is provided with a jacket composed of one-inch wood lagging for insulation to minimize condensation, and a water-tight covering of 20-gage galvanized Armco iron. The gravity delivery of sand to locomotives is unusual in that the delivery pipe and the sand valves are five inches in diameter.

The concrete foundations and track hopper were built by railroad forces, which also erected the superstructure and the machinery. The superstructure was fabricated by the Darby Corporation, Kansas City, Mo., and all of the coal and dry-sand handling equipment was furnished under contract by Roberts & Schaefer Company, Chicago, including the elevating machinery, which was obtained from the Link Belt Company, Chicago. All the wrought iron used was furnished by A. M. Byers Company, Pittsburgh, Pa.

Co-ordinator Weighs Cost Finding Methods

WASHINGTON, D. C.

CO-ORDINATOR Eastman on September 19 announced his plans for carrying on research into the subject of railroad cost finding and the possibility of introducing new accounting and statistical methods which will promote it, along the general lines recommended in a proposed report issued by him some time ago in connection with the investigation initiated by the Interstate Commerce Commission, Ex Parte 91, with respect to a general revision of the accounting rules for steam railroads. The object of the research, he says, "will be to probe the possibility of a gradual development of cost finding for railroads," and "it is not the intent to impose a new system of accounting over night, nor to adopt new methods generally without prior experimental tests."

The particular occasion for the study is that Section 13 of the emergency transportation act, 1933, requires the co-ordinator to investigate, among other things, "cost finding in railroad transportation."

He has employed for this purpose John H. Williams, who was one of the witnesses for the Taylor Society at the hearings in Ex Parte 91, and who is engaged in practice as a management engineer specializing in administrative control involving budgeting and cost accounting methods. C. H. Crandall, one of the leading accountants on the commission's staff, has been delegated to assist Mr. Williams in this work. He will further be assisted by an unpaid advisory committee, which at present is made up of three railroad men experienced in accounting and of two non-railroad men who have extensive knowledge of the cost finding methods now in use in other industries.

The railroad representatives on this committee are C. E. Hildum, executive vice-president of the Lehigh Valley, C. E. Betts, general auditor of the Atchison, Topeka & Santa Fe, and G. W. Lamb, general auditor of the Atlantic Coast Line. The non-railroad representatives are now Dr. H. S. Person, managing director of the Taylor Society, and Prof. John Maurice Clark of Columbia University. The state commissions and the National Industrial Traffic League will also be invited to appoint representatives on this advisory committee.

At the hearings in Ex Parte 91 investigation a proposed new system of accounts was submitted by the National Industrial Traffic League applying the principles of so-called cost accounting. It provided for an elaborate segregation or allocation of receipts and expenses to particular services or operations. An alternative plan of somewhat similar nature was submitted in behalf of the statistical committee of the National Association of Railroad and Utilities Commissioners. Both plans were vigorously opposed by railroad witnesses. The Taylor Society, a professional society, organized for the study of management in the attempt to devise and formulate principles to promote the science of management, presented comprehensive evidence in regard to the application and practical use of cost finding in private industrial enterprises.

Following the hearings, a proposed report was issued by the presiding commissioner, who is now co-ordinator, in which he stated that the impression derived from the mass of conflicting evidence was "that it is certainly possible, if not probable, that a system of accounting for railroads can be devised, accompanied by appropriate statistical requirements, which will enable the regulating authorities, federal and state, to obtain better and more nearly current information in regard to service costs than can now be obtained, and also to obtain this information more readily." It was clear, however, he said, that the proposed plans were not in shape for adoption. The following statement was also made:

> It is also sufficiently clear that while a public hearing in an inquiry of this kind serves a very useful purpose in focusing attention upon the problem and bringing to light the essential underlying questions, it is an ineffective and inefficient means of arriving at definite and detailed conclusions. The tendency in a public hearing is to array against each other very positive and emphatic statements of conflicting views. Partisan antagonism is magnified and accentuated. For many purposes this method of inquiry has positive merits, but when the subject matter is an accounting system, involving innumerable details which ramify and extend into all manner of questions of practical administration, operation, and even applied mathematics, the better method of inquiry is plainly something akin to scientific research which can be carried on away from the forum, can penetrate into the field of actual operations, and can even, if need be, undertake various tests and experiments.

The recommendation was that a special committee, made up of representatives of various interested parties, be organized under commission auspices to conduct further research into the matter with the aid of the commission's accounting staff. "No final action on this proposed report, however, was taken," the co-ordinator now says, "owing to doubt as to the wisdom and feasibility of pressing the matter in the midst of the financial depression which soon after ensued. However, the co-ordinator is now under a mandate from Congress to investigate cost finding, and no doubt this is wise in view of the rapidly growing competition which the railroads are meeting from other transportation agencies and the consequent need of accurate knowledge of railroad costs of service."

Eastman Studies Control of Water, Motor Transport

WASHINGTON, D. C.

JOSEPH B. EASTMAN, federal co-ordinator of transportation, on September 18 sent a questionnaire to approximately 1,100 companies engaged in operations on intercoastal, coastwise, inland and Great Lakes routes. This questionnaire was prepared by his Section of Research. The United States Shipping Board has aided in securing a full response by means of a letter addressed by Admiral H. I. Cone to such of the lines as are subject to the jurisdiction of that body.

"It is believed," Mr. Eastman said, "that the returns of this inquiry will aid materially in considering, in connection with possible further legislation, the problems and needs of this branch of the nation's transportation machine. Among the subjects of inquiry are the equipment and other facilities in use, the volume and character of traffic handled over the various trade routes, the competitive and co-operative relations between such carriers and between water, rail and other agencies, the financial condition of the industry, operating practices and operating costs, including labor costs, and taxes paid. Expressions of views on the need for further federal regulation are requested, as well as on the form such regulation should take and the agency or agencies which should administer it. An expression is also asked on the matter of charging tolls for the use of improved waterways."

A much abbreviated questionnaire is being sent to certain other operators of water craft. Among the questions asked are:

Please give list of your principal competitors on each service you operate, and advise if they are common or private carriers.

Please state parties with whom you participate in through rates and basis of divisions of rates and terms of transfer.

Please furnish one copy of tariff(s) issued by you in effect June 30, 1933.

What basis did you use in constructing such tariff (s); for example, were rail rates considered and an arbitrary differential established? What is your differential?

State briefly how your present local and through rates compare with those of your principal competitors.

State what freighting contracts you have outstanding, giving commodities, rates, and duration of contracts.

Total amount of traffic interchanged in each of the years 1928-1932 (1) with railways, (2) with water carriers.

To what conferences or rate-making groups did you belong on June 30, 1933, and what was membership thereof?

What government regulation are you subject to?

What certificate of public convenience or necessity do you hold?

Is your company owned or controlled, directly or indirectly, by any industrial or commercial company or companies? If so, please name them.

What company and/or agency of transportation do you find to be your severest competitor?

Please state briefly your views and reasons therefor concerning the need of federal regulation of all water carriers and particularly on your trade route. Do you recommend any modification of the present laws, the extension of same to other kinds or classes of water carriers or to traffic not now covered? What federal agency or agencies do you feel should be charged with such regulation?

There has been a recurring demand by the railroads for repeal of the Panama Canal Act so as to permit them to reenter the field of water transportation. Because of doubt as to the merits of this proposal, the opinions of practical water operators are desired.

In your opinion, should tolls be charged for the use of inland waterways made navigable at public expense? Give reasons for answer. If, in your opinion, tolls should be charged, on what basis should they be assessed?

What proportion of passenger fare is consumed in the cost of carrying a passenger?

What proportion of total vessel operating cost is chargeable to passenger service?

Has the passenger service as a whole on this route proved profitable for each of the last five years?

Do you maintain joint through passenger rates with railroads or steamship companies?

What is your average passenger revenue per passenger on joint through passenger tickets?

How do your fares compare, for comparable service, with those by rail?

To what conferences or rate-making groups that set passenger fares do you belong?

A separate questionnaire was addressed to towing companies and owners of lighters and fishing craft operating over rivers, federal, state and private canals and connecting channels of continental United States, and another to carriers by water which report annually to the Interstate Commerce Commission.

The co-ordinator has sent out personal letters to the chairmen of the public service commissions of the 48 states and the District of Columbia, enclosing an inquiry prepared by his Section of Research, concerned mainly with the problem of motor carrier regulation. It is believed that it will develop much useful information as to the methods of regulation used by the states over a considerable period of years, the problems presently encountered, the need for federal regulation, the form which any such regulation should take, and the part the states can play in administering it. Certain statistical information is also requested, and there are brief inquiries as to the regulation of water and air carriers, including the following:

Number of certificates and permits issued, denied, revoked, etc. September 1, 1932, to August 31, 1933, or latest 12 months' period for which data are available.

Name the principal causes of suspensions and revocations.

Name the principal causes of "common carrier" abandonments.

Investment, revenues, expenses, and traffic of motor carriers operating under certificates and permits issued by your Commission for the year 1930, 1931, 1932.

Number of complaints and investigations involving motor vehicle carriers for the year ended September 1, 1933, or for latest 12 months' period for which information is available.

Give proportions of complaints filed (a) by shippers or patrons of motor carriers (b) by other carriers, and (c) by others.

Describe in the order of their importance the principal obstacles and difficulties encountered in the administration and enforcement of the motor carrier regulations, particularly as to securing observance of limitations attached to certificates or permits as to routes, class of service and character of traffic handled; observance of rates; lessening wasteful competition and promoting co-ordination of services of motor or motor and rail carriers; eliminating discriminations; obtaining adequate records and reports; improving service, equipment and facilities; securing financial responsibility of operators; and prevention of schemes and devices used by motor carriers or shippers to evade regulation.

What benefits and/or disadvantages have resulted or may fairly be anticipated in consequence of regulation of motor carriers by your state from the standpoint of (1) Motor carriers, (2) Railroads and other common carriers, (3) Shippers and passengers, and (4) The general public?

What general powers left to the discretion of the commission (for example, the power to prescribe rates or a uniform system of accounts, to require reports, or to control and regulate service, the issuance of securities, etc.), has it been found impracticable to exercise either wholly or in part?

In granting certificates and permits what consideration does your commission give to the existing service (1) of rail or water carriers and (2) of other motor carriers, and to the probable effect of the proposed motor carrier service upon such other carriers?

Does your commission permit rail or water carriers to engage in motor transportation and, if so, under what conditions?

Does your commission permit joint rates between motor carriers and rail or water carriers?

Where abandonments of rail lines or service have occurred as the result of the competition of motor carriers, have the latter maintained a dependable and satisfactory service?

If your state has laws or rules regulating hours of labor of bus and truck drivers, what methods are used to enforce them? With what success?

Does the lack of federal regulation of interstate motor carriers substantially discriminate against intrastate shippers, passengers, carriers or commerce or substantially hamper the efforts of your

state to regulate intrastate motor carriers and commerce? Explain fully.

Does your commission favor federal regulation of interstate motor carriers?

Should rail and water common carriers be permitted to engage in motor transportation and, if so, to what extent or character of service should such operations be restricted and why?

If federal regulation should be undertaken, in what respects could your commission or other state agencies co-operate with and assist the federal agency in the administration and enforcement of the law in respect of (a) registration and licensing of operators; (b) the hearing and adjustment of complaints as to rates, service or other matters; (c) policing of rates, service, safety and equipment regulations; (d) ascertaining and reporting violators of federal laws or regulations?

What regulation of water carriers is in effect in your state and what need, if any, is there for amplification or relaxation of such regulation? If there is a tendency in your state for common carriers by water to cease operating as such and to engage in contract operations, indicate reasons.

What regulation of air lines is in effect in your state and what need, if any, is there for further state or federal regulation?

Please list the principal bills introduced in your legislature during 1932 and 1933 affecting regulation of highway, water, and air transportation, and state the purpose and the final disposal of each.

Wood Preservation Slumps Further in 1932

STATISTICS on the wood-preserving industry for 1932 show that the quantity of timber given preservative treatment declined to the lowest level since 1919. This reduction is due in part to the decline in the demand for treated ties which have always comprised more than half of the volume of wood treated. However, if the decline in the demand for treated wood outside the railway industry had been no more than that in cross and switch ties, the total for 1932 would have been appreciably larger, for the volume of wood treated for these two purposes represented a smaller reduction compared with the output in the years of maximum production than any other classification. The net result of the operations for 1932 was that the volume of timber treated as crossties comprised 66.8 per cent of the total, compared with 62.5 per cent in 1931 and 57 per cent in 1930.

The quantity of timber given preservative treatment in the United States in 1932 totaled 157,418,589 cu. ft., a decrease of 75,915,713 cu. ft., or 32.5 per cent below the quantity treated in 1931 and a decrease of 56.7 per cent from the maximum established in 1929. Of this total, railway crossties comprised 105,136,449 cu. ft., a decrease of 40,697,043 cu. ft. as compared with 1931 and the smallest volume since 1918. Switch ties totaled 8,603,872 cu. ft., a reduction of 2,293,660 cu. ft., or 21 per cent below 1931. Taken together, cross and switch ties comprised 72.3 per cent of the timber treated last year, while in 1931 they amounted to 67.2 per cent. Seven of the eight classes of material treated last year showed decreases as compared with 1931, ranging from 21 per cent for switch ties to 61 per cent for wood blocks, while only one classification, cross arms, showed an increase, 16 per cent.

These figures together with the data given below are taken from the annual statistical report on wood preservation in the United States in 1932 which was compiled by R. K. Helphenstine, Jr., forest service, United States Department of Agriculture, in co-operation with the American Wood-Preservers' Association.

Of the total number of crossties treated, which was 35,045,483, or 13,565,681 less than in 1931, nearly 63 per cent were treated with creosote, 23.9 per cent with creosote-petroleum mixtures, 9 per cent with zinc chloride, 3.2 per cent with zinc-creosote mixtures, and 1.4 per cent with miscellaneous preservatives.

As in previous years oak ties ranked first in number treated, which was 16,005,297, or 45.7 per cent of the total, while southern pine ties occupied second place with 6,275,560 treated, or 17.9 per cent of the total, Douglas fir was third with 3,308,395 ties or 9.4 per cent.

Of the total switch ties treated which was 103,246,473 ft. b.m., a decrease of 27,523,905 ft. b.m., or 21 per cent below 1931, 55.8 per cent were of oak, 19.6 per cent were southern pine and 13.2 per cent were Douglas fir.

The number of treating plants in the United States in 1932 was 214, of which 195 were in active operation and 19 were idle. Two plants were abandoned during the year, both of which were of the non-pressure (open-tank) type. Of those in active operation, 128 were of the pressure-cylinder type, 50 were of the non-pressure type, and 17 were equipped for both pressure and non-pressure treatment. No new plants were constructed.

The quantity of creosote consumed in the preservation of timber last year amounted to 105,671,264 gal., a decrease of 49,765,983 gal., or 32 per cent below the amount consumed in 1931, and the lowest figure reported for any year since 1922. Only 19.4 per cent of the creosote was imported, as compared with 27 per cent in 1931 and 31.9 per cent in 1930. The amount of zinc chloride used was reduced 2,654,317 lb., or 25.7 per cent, to a total of 7,669,126 lb., while the consumption of miscellaneous salts, 869,240 lb., showed a reduction of 89,045 lb. or 9.3 per cent. Miscellaneous liquids used, 92,656 gal., showed a decrease of 23.2 per cent.

Wood Preservation, 1909-1932

Together with consumption of creosote and zinc chloride

Year	Total Material Treated, Cu. Ft.	Number of Crossties Treated	Creosote Used, Gal.	Zinc Chloride Used, Lb.
1909	75,946,419	20,693,012	51,426,212	16,215,107
1910	100,074,144	26,155,677	63,266,271	16,802,532
1911	111,524,563	28,394,140	73,027,335	16,359,797
1912	125,931,056	32,394,336	83,666,490	20,751,711
1913	153,613,888	40,260,416	108,378,359	26,466,803
1914	159,582,639	43,846,987	79,334,606	27,212,259
1915	140,858,963	37,085,585	80,859,442	33,269,604
1916	150,522,982	37,469,368	90,404,749	26,746,577
1917	137,338,586	33,459,470	75,541,737	26,444,689
1918	122,612,890	30,609,209	52,776,386	31,101,111
1919	146,060,994	37,567,247	65,556,247	43,483,134
1920	173,309,505	44,987,532	68,757,508	49,717,929
1921	201,643,228	55,383,515	76,513,279	51,375,360
1922	166,620,347	41,316,474	86,321,389	29,868,639
1923	224,375,468	53,610,175	127,417,305	28,830,817
1924	268,583,235	62,632,710	157,305,358	33,208,675
1925	274,474,538	62,563,911	167,642,790	26,378,658
1926	289,322,079	62,654,538	185,733,180	24,777,020
1927	345,685,804	74,231,840	219,778,430	22,162,718
1928	335,920,379	70,114,405	220,478,409	23,524,340
1929	362,009,047	71,023,103	226,374,227	19,848,813
1930	332,318,577	63,267,107	213,904,421	13,921,894
1931	233,334,302	48,611,164	155,437,247	10,323,443
1932	157,418,589	35,045,483	105,671,264	7,669,126

Statement of Material Treated By Classes (Cu. Ft.)

Class	1932	1931	Decrease	Per Cent Decrease
Cross Ties	105,136,449	145,833,492	40,697,043	27.8
Switch Ties	8,603,872	10,897,532	2,293,660	21.0
Piles	6,815,532	12,119,880	5,304,348	43.8
Poles	21,947,200	39,966,062	18,018,862	45.1
Wood Blocks	490,184	1,256,567	766,382	61.0
Crossarms	370,904	319,625	51,279*	16.0*
Construction Timbers	10,120,582	16,624,072	6,503,490	39.1
Miscellaneous Material	3,933,866	6,317,072	2,383,206	37.7

*Increase

Treatment of Miscellaneous Materials (Ft. b. m.)

	1932	1931	1930	1929
Lumber	33,994,619	43,119,020	76,244,055	87,972,030
Fence Posts	2,995,174	13,468,058	17,843,001	10,904,180
Tie Plugs	652,489	1,149,058	1,779,215	2,018,147
Crossing Plank	392,830	2,248,946	2,552,370	273,588

Motor Transport Section

Lost Traffic Recovered by Missouri Pacific Trucks

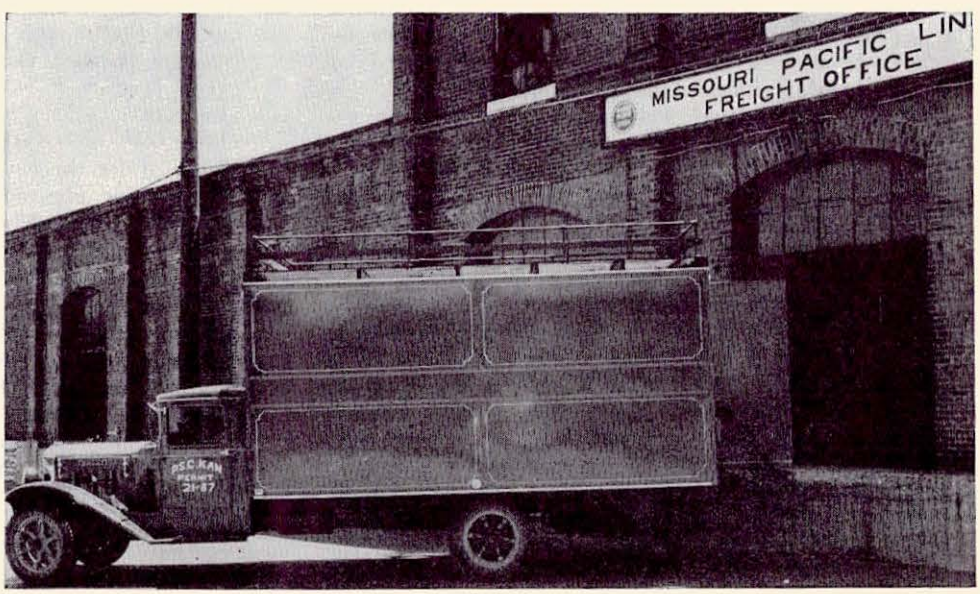
Two "short-cutting" highway routes attract traffic by eliminating delays—Train-replacement route also successful

TO meet special situations and to overcome conditions newly arisen as a result of truck competition, the Missouri Pacific has established this year three motor truck routes of its own in the state of Kansas. Although all three of these lines are only a few months old, they have already demonstrated their ability to perform satisfactorily the service for which they were designed, they have enjoyed a steadily increasing traffic and, most important of all, they have brought about a recovery by the railroad of a substantial volume of traffic which had been taken away by competitive contract truck operators.

The operation of the first two truck routes came about when increases in the traffic handled by competitive contract truck lines demonstrated the need for faster common carrier service to meet the requirements of the shipping public and to protect the interests of established centers of trade on the Missouri Pacific. The accompanying map shows that the Missouri Pacific railway lines in the central and northern parts of Kansas, generally speaking, from east to west. Between the main line running westward from Kansas City, Mo., to Pueblo, Colo., and the branch line from Atchison, Kan., to Stockton, the only Missouri Pacific lines running in a northerly or southerly direction are short branches which leave substantial gaps between the longer east-west lines. Other railways connect these two Missouri Pacific lines, but freight moving from points on the one to points on the other has been subjected to delay by reason of slow movement through interchange points resulting from inconvenient connections.

The need for the first Missouri Pacific truck route became apparent when the wholesalers in Salina, Kan., demanded a faster and more convenient common carrier freight service to points along the Stockton and Lenora branches of the Missouri Pacific. A substantial volume of freight had moved by rail from Salina to these points, but expanding truck lines had endangered this business of the Salina shippers by making it possible for wholesalers at Omaha, Neb., and Hastings to invade the Kansas territory.

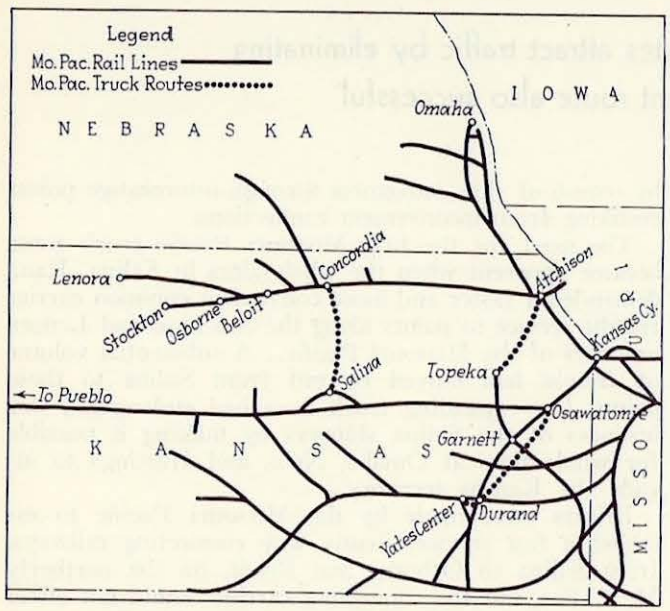
Efforts were made by the Missouri Pacific to establish a fast service, jointly with connecting railways, from Salina to Osborne and Beloit, on the northerly M. P. line, but the connecting carriers could not effect the necessary readjustment of their schedules. Consequently, on March 6, the Missouri Pacific established a truck route between Salina and Concordia, to bridge the gap between its two east-west railway lines. By means of this truck line from Salina, connecting with Missouri Pacific train service at Concordia, a fast continuous service is maintained to all points west of Concordia on the Stockton and Lenora branches. The truck operates from Salina on a schedule calling for evening departure, which allows a full day of loading time at Salina. It covers the 61-mile run to Concordia in ample time for the freight to be transferred to freight cars and forwarded for delivery by local freight, per-



This Truck Operates Over the Topeka-Atchison Route, Short-Cutting the Circuitous Railway Line and Reducing Delivery Time by 24 Hours.

mitting next day delivery from Salina to all stations on the Missouri Pacific from Concordia to Stockton and to Lenora, distances of 94 and 140 miles, respectively. The co-ordinated truck-rail service has eliminated a delay of 24 hr. to the traffic handled and has rendered unnecessary the establishment of a competitive common carrier truck service from Salina to points north and northwest along the Missouri Pacific.

The return movement of the truck from Concordia to Salina is utilized by the railway to eliminate a 24-hr. delay in the movement of freight from Atchison, Kan., to Salina. Through traffic is now handled from Atchison to Concordia by train and thence via truck to Salina,



Missouri Pacific Railway and Truck Lines in Kansas

speeding up the service by 24 hr. as a result of the more direct movement and the avoidance of congested terminals. The tonnage handled by the truck operating between Salina and Concordia has been as follows:

Tonnage Handled, Salina-Concordia Truck

March, 1931	42,318 lb.
April, 1931	86,348 lb.
May, 1931	109,984 lb.
June, 1931	130,541 lb.
July, 1931	125,174 lb.

More than 90 per cent of this business, according to officers of the Missouri Pacific, is traffic which had been handled previously by contract truck operators. The service has been found eminently satisfactory by shippers, as it has had an almost perfect record of on-time operation since its inauguration.

The second Missouri Pacific truck route was established between Topeka, Kan., and Atchison. Applications of three trucking companies for permits to operate as common carriers from Topeka to Atchison and then, paralleling the Missouri Pacific line, to Concordia, a distance of 155 miles, were pending. The movement of freight from Topeka to Atchison and points west via the Missouri Pacific railway lines is handicapped by a circuitous movement via Kansas City, involving considerable delays since the rail distance via the Missouri Pacific from Topeka to Kansas City alone is 136 miles and the movement of freight, from loading time to unloading time, requires 36 hr. Connecting lines operating north and south railway routes could not, with their train service, give the Missouri Pacific connections from Topeka that would match up to provide next day delivery from Topeka to points on the Missouri Pacific between Atchison and Concordia.

To meet this situation, a truck was placed in service between Atchison and Topeka on April 10, providing next morning delivery from Topeka to points along the line. With the establishment of the Missouri Pacific truck service, the applications of the truck operators for common carrier permits were withdrawn.

After this truck had been in service for some time, jobbers at Atchison asked to be allowed to use it on the southbound trip to provide fast movement from Atchison to a connection running west from Topeka. This was readily arranged and the result was that traffic moving from Atchison to points west of Topeka on the connecting line was saved 24 hr. in transit, since the necessity of the movement from Atchison to Kansas City and thence to Topeka was avoided.

The tonnage handled on this line has been as follows:

Tonnage Handled, Atchison-Topeka Truck

April, 1933	47,879 lb.
May, 1933	151,830 lb.
June, 1933	178,936 lb.
July, 1933	159,975 lb.

In the case of this truck route, as in that of the other, it is estimated that approximately 90 per cent of the traffic handled represents freight recovered from competitive contract truck operators. The service has been found satisfactory by shippers, since it has had an on-time record of 98 per cent since it has been in effect. The highway mileage between Topeka and Atchison is 61 miles.

The third Missouri Pacific truck route connects Osawatomie, Kan., and Yates Center, a distance of approximately 70 miles. Due to the discontinuance of a local passenger train, the Missouri Pacific had to provide a mixed train service from Osawatomie and Durand and return, a distance of 130 miles. However, the volume of mail, baggage, express and l.c.l. freight received and forwarded from the six stations on the route was very light, and the schedule necessary to render a satisfactory service did not permit the railway to secure maximum efficiency from the local train operation. To meet this situation, a truck was placed in service on April 17 to handle the mail, baggage, express and l.c.l freight traffic between Osawatomie and Yates Center. The schedule maintenance has been 97 per cent since the inauguration of the service, and the truck, by reason of the flexibility of its operation, has brought about a greater use of the railroad to and from the stations served. All shipments are billed as to rates, classifications, etc., by the railroad, and the railroad itself is fully responsible to consignees and consignors. The traffic has shown a steady increase on this line and the tonnage handled has been as follows:

Tonnage Handled, Osawatomie-Yates Center Truck

May, 1933	61,895 lb.
June, 1933	64,384 lb.
July, 1933	76,481 lb.

In each of its three truck operations in Kansas, the Missouri Pacific contracts with local draymen for the truck service necessary to meet its schedules, the contract of the truck operators requiring insurance protection against loss to the railroad. The trucks used do not carry the Missouri Pacific trade mark or other advertising and are identified merely by the permit number assigned by the Kansas Public Service Commission. The accompanying illustration shows the truck which is in operation between Topeka and Atchison. On the regular shipping days of meat and other perishable traffic, full refrigeration is supplied on these trucks, this being given at an extra cost of approximately 50 cents per trip. In all cases, the truck service is operated on a station-to-station basis, no pick-up and delivery at storedoors of shippers and consignees being involved.

Railroad Agents and Shippers Comment on Store-Door Service

Boston & Maine gets first-hand data on reception accorded its pick-up and delivery arrangement

WHAT do shippers think of storedoor pick-up and delivery service that is now being offered by a number of the railways? Is this service, which adds more or less to the cost of freight transportation, effective in securing the routing of freight by rail instead of by competitive motor truck transportation? Is the provision of pick-up and delivery service by railway managements helpful to railroad station agents in their solicitation and cultivation of freight traffic in the face of the determined drives for business made by competitors of the railway? When it completed its first year of pick-up and delivery operation, the Boston & Maine determined to learn the answers to these questions. The opinions of a large number of shippers and of agents at both large and small stations were solicited by the freight traffic department, and many interesting and instructive replies were received.

In an article entitled "Analyze Results of Pick-Up and Delivery Service," published in the Motor Transport Section of the *Railway Age* of July 22, the results to the railroad of the provision of pick-up and delivery service were described in some detail. Briefly, the Boston & Maine concluded, after exhaustive analysis of what the service had achieved, that this additional inducement to shipping by rail had accomplished what was intended, in that it had prevented a further spread of truck competition in Boston & Maine territory and had brought about the return of some business to the railroad. It is the conclusion of the Boston & Maine that complete transportation service from storedoor to storedoor, accomplished by the co-ordination of railway and truck service, is necessary if the railways wish to continue to haul merchandise traffic. This represents the opinion of the management on the storedoor pick-up and delivery question. What, however, do the shippers and railroad agents think of it?

Railroad agents in small cities and towns were found to be somewhat divided as to the effectiveness of the service in benefiting the railway, although a substantial majority favored it and indicated that it had recovered traffic from highway competitors. Of 34 such agents from whom comments were received shortly after the first year of experimental operation, 21 said that it had helped to recover traffic at their stations, while 13 reported no increase in business as a result of the provision of pick-up and delivery for l.c.l. freight. Among those who reported no increase in business, several stated that the traffic which moved through their stations under the pick-up and delivery tariff was business which they would have had anyway and was from regular railway customers. Other agents reported that the pick-up and delivery service was utilized by shippers only in the movement of freight between points where truck competition did not exist.

Some of the negative comments of agents in small cities or towns were as follows:

"Very few shipments handled. Increase does not warrant the continuance of the service."

"Our shippers inform us that to those points to which they are now trucking l. c. l. freight, the rates and service are so much more favorable that they do not care to change. On the other hand, these same people do not hesitate to call on us for pick-up and delivery to and from points where there is no truck competition."

"I am inclined to think a large part of our pick-up and delivery traffic has been from regular customers taking advantage of our delivery service."

"The pick-up and delivery service has not increased the railroad business to any great extent at this station. We would have received the business anyway."

"Pick-up and delivery service has not increased our tonnage. Most of the shipments suggest an attempt on the part of the shipper to shuffle off on the pick-up and delivery service traffic which is not attractive to the trucks."

Traffic Increases Told

As stated before, however, the majority of the Boston & Maine agents in small cities or towns reported direct benefits from the provision of the storedoor service. Some of the comments of such agents follow:

"Pick-up and delivery service has given us tonnage that we would not have been able to secure without this service and has helped to hold other business that we would have lost except for it."

"Our pick-up and delivery experiment has been a success. If we should discontinue it, the trucks would take a lot of business away from us."

"Our pick-up and delivery service has increased our tonnage, and without it our decrease would have been far greater than it was."

"Of the shippers at this station, 150 are utilizing the pick-up and delivery service. It has brought back business to the railway and will continue to do so."

"The pick-up and delivery service has been the means of increasing our business. The mills use our service as a part of their sales talk, advising consignees that they will deliver to their door. This puts them on an even footing with the mills nearer the market who deliver to their customers by truck."

"Before pick-up and delivery service was inaugurated, our mills were making daily shipments by independent trucking concerns. For the past few months, we have handled all of their business, due to the delivery service."

Lost Ground Recovered at Large Stations

Of 12 agents in large cities or towns, 10 commented favorably upon the results of the pick-up and delivery service, while 2 found that it had not been effective in bringing about a great increase in the railroad's traffic. The two with a negative attitude reflected the opinions expressed by some of the agents at smaller towns. Some of the favorable comments from agents in larger cities were as follows:

"If it were not for pick-up and delivery service, we could not hold the traffic here. Our big trouble is with the quicker service given by the trucks. During the month of March, we received 64,182 lb. of packing house products in the pick-up and delivery service even though our rates were 8 cents higher than those of the trucks."

"A fair estimate of the increase in our l. c. l. business in pick-up and delivery territory would be around 80 per cent, which means just so much business has been reclaimed from the various motor trucks running out of this city."

"We have been able to have returned to the railroad shipments formerly moving by truck, and that has been due entirely to the pick-up and delivery service. While there may be some doubt as to whether the revenue secured from the new business is sufficient to offset the entire expense of the storedoor service, I am

convinced that the further loss of business to trucks, had we not started the pick-up and delivery service, would have been a great deal more than the extra expense incurred in handling the pick-up and delivery tonnage."

Want Service Extended

Quite a few of the agents in both large and small cities expressed the desire that the pick-up and delivery service be extended. The statement was repeatedly made that the success of the service secured when it was operated on a restricted scale was only a fraction of that which might be attained if pick-up and delivery service was offered throughout the territory and especially on connecting lines to the South. This viewpoint is expressed in some of the following comments from the agents:

"The pick-up and delivery experiment has not increased the railroad's business at this station, but has saved some of our business from the trucks. The public cannot understand why the pick-up and delivery service does not apply to all freight coming to this point regardless of its point of origin."

"Pick-up and delivery service is the right step to maintain our l. c. l. business, and we believe that when we can have this service the country over, the railroads will no doubt win back the bulk of their l. c. l. tonnage."

"The pick-up and delivery service is very popular here, but it is my thought it should be extended to cover more territory. It is about the only weapon we have against the truck. The tonnage is steadily increasing."

"It has increased the railroad's business, although the service is so incomplete, on account of our not servicing shipments for southern or western points, that our shippers and consignees find little value in it."

"It is hard to say how much new business we are now getting, although I know there is some. If we had pick-up and delivery service with all our connections, I know we could get more."

"The pick-up and delivery service has not only secured several new accounts but has also helped to retain other accounts which would have gone to the trucks. If we could only make some arrangement for New York delivery, together with service to the industrial section of Connecticut, I believe we could make material gains in our l. c. l. tonnage."

Effect on Station Operation

Certain changes in operating methods, to make the pick-up and delivery service more effective, were suggested by the agent at one large city. He said:

"There is no doubt we have received an increase in business. Pick-up and delivery is of vital importance to us. It is difficult to say what we would have lost if this service had not been inaugurated. The service has increased our freight house handling costs five cents per ton. This increase is occasioned from the fact that under the old system shipments arrived here more or less during the day. While we had a rush hour in the afternoon, it was all over by five o'clock. Under the new service, a great number of shipments are brought here by our truckmen after five o'clock. This has necessitated the changing of the hours of the men and makes a longer day in the house for supervision, which has increased the cost. There are so many shipments on some of our pick-up trucks that it takes a clerk to handle each truck, whereas under the old system a clerk could handle two or three trucks at a time.

"I believe that some arrangement should be made with our truckmen so that they could get at least a part of their freight here early in the day. I realize the amount they are receiving for this service is small and it is difficult for them to make both ends meet, but the sad part of the present arrangement is that the shipper who gives his freight to the truck early in the afternoon is, as a rule, the one who suffers delay because his business is on the forward end of the truck and the late man's freight is on the rear end. If the truck is late in arriving at the freight house, the freight on the rear end may get out that night and that which was loaded on the truck first may be held up until the next day.

"The truckman should use smaller units and make more frequent trips. If possible, the departure of trains should be changed to later hours so that we could load every shipment the same night. I think that the pick-up and delivery service is one of the biggest advances we have made in the last few years."

Comments on the pick-up and delivery service and the effect which it has had on their shipping practices were received by the railway from nearly 100 shippers of all kinds. The great majority stated that the availability of this service had caused them to route freight by rail which otherwise would have moved by truck. Although a few shippers indicated that they had not so changed the routing of their freight, the ratio of those who had given more business to the railroad, to those who had not given more business to the railroad, was nearly four to one. Like the railroad agents, a number of shippers expressed a desire that the service be extended to connecting lines.

Shippers Praise Service

Some of the comments of shippers indicated that the pick-up and delivery service has been remarkably successful in effecting the routing by rail of freight which had been moving by competitive motor trucks. A few of these comments were as follows:

From an agricultural implement manufacturer—"The pick-up and delivery service has been a big help to us. We can send freight to the freight house at any time, whereas the trucks operating over the road may or may not arrive on the day we want the shipment to go forward. It is our impression that we have given the Boston & Maine 25 per cent more tonnage since this service was inaugurated."

From a paper bag manufacturer—"We are increasing our use of your pick-up and delivery service and soon 95 per cent of our tonnage will be routed via the railway instead of 60 per cent as heretofore. It is our conviction that only by such service can the railroads compete effectively with the trucks."

From a boot and shoe manufacturer—"Your pick-up and delivery has been the means of taking away from trucks approximately 90 per cent of our business. Formerly, we paid the trucks approximately $100 per week. Now, they are receiving less than $20. If all the New England lines would put in a door-to-door delivery service, we feel sure that approximately 75 per cent of the tonnage moving by trucks today would be returned to the railroads."

From a large candy manufacturer—"We have restored to the Boston & Maine since this service went into effect, an average of 2,000 lb. a day and will continue using this service wherever possible."

From another large candy manufacturer—"Your service is very good, and about 75 per cent of our shipments, now going by rail, used to go by truck."

From another candy manufacturer—"After going over our records for the past three months, we are in a position to say that we have been shipping 70 per cent of our merchandise via the Boston & Maine pick-up and delivery service, which formerly was forwarded by trucks."

From a distributor of canned goods—"We are giving you at least 50 per cent of our business which would otherwise have moved via the trucks if you had not established the pick-up and delivery service."

From a large drug company—"The service you have been rendering has been excellent, and of the tonnage now being forwarded that way, approximately 40 per cent is business which was formerly moving via motor truck lines."

From a felt manufacturer—"Since you adopted pick-up and delivery service, we have received and shipped about 85 per cent of our goods via the Boston & Maine that previously had been shipped by truck."

From a large wholesale grocer—"Of course, one cannot drop truckmen overnight when the freight rate and the overland rate are the same, but if you continue with the good work, we will do all we can to increase the tonnage on the pick-up and delivery service. Our tonnage by motor truck has decreased and we should say that you have gained about 50 per cent more tonnage through your pick-up and delivery service."

From a chewing gum manufacturer—"In the first four months of this year, as compared with the same period in 1932, our shipments via the Boston & Maine have increased 60 per cent. This increase is due partly to the advantages of your pick-up and delivery service."

From a knitting mill—"About 90 per cent of our production is now shipped via Boston & Maine pick-up and delivery service, which was formerly sent over the highway."

From a large merchandise distributor—"We are very pleased with your pick-up and delivery service. It has eliminated trucking almost 100 per cent."

From a paint manufacturer—"We were gradually getting away from the Boston & Maine service altogether, but since the inauguration of your pick-up and delivery service, we are shipping daily via your line orders that heretofore had gone by truck."

From a large paper manufacturer—"We have given you approximately 300,000 lb. of l. c. l. tonnage during the first four months of this year, which would otherwise have moved via the highway."

From a paper manufacturer—"It might be interesting to you to know that our average tonnage for your pick-up and delivery

service is nearly 5,000 lb. per day. Most of this is new tonnage for the railway."

From another large paper manufacturer—"Since your pick-up and delivery service has gone in, we have returned quite a little traffic to the railroad. The record for the month of April shows that 43 per cent of our l. c. l. traffic, which ordinarily would move by truck alone, was turned over to the Boston & Maine pick-up and delivery service."

From a large rubber goods manufacturer—"Since this service was inaugurated, we have been able to give you more business than we did previously. As this continues, nearly 99 per cent of the traffic which we have been handling on motor trucks will go back to the railway."

From a large soap manufacturer—"The storedoor delivery situation is an important one to us. In fact, we must have storedoor delivery in the territory served by your rails within at least 100 miles and probably over a wider area. The elimination of your pick-up and delivery service would reverse the present situation and drive us back to the motor trucks."

From a manufacturer of surgical supplies—"All of the tonnage you are now handling in this service formerly moved by truck."

From a manufacturer of textile finishing products—"Since the pick-up and delivery service was inaugurated by you, we have cut out all other types of delivery."

From a distributor of washing compounds—"During the past year, we shipped over your road 113 tons of merchandise which would have moved by truck had not the pick-up and delivery service been available. We have had very favorable comments from our customers regarding this service, and should you discontinue it, it would be necessary for us to divert our shipments to truck carriers inasmuch as our customers have been educated in the past to having their merchandise delivered by truck to their doors."

From a wire manufacturer—"We cannot say too much for your pick-up and delivery service. Before it went into effect, we used trucks practically exclusively. We have not had trucks in our yards since the service was inaugurated. Should it be discontinued, our tonnage would go back to the trucks. We have put back on the rails approximately three hundred to four hundred tons a year. The railroads would do well to make pick-up and delivery service a universal practice."

National Carbide Emergency Truck Light

AS a safety measure, many states have passed laws requiring lights to warn moving traffic of the presence of stationary vehicles. Most of these laws require trucks operating after dark to carry emergency lights, for use in case the trucks become disabled or are required to park along the highways after dark, and provide that such lights be placed a reasonable distance to the front and to the rear of the disabled vehicle as a warning signal to oncoming traffic.

To meet these requirements, the National Carbide Sales Corporation, New York, has placed on the market the National Carbide WL 1-CI lantern equipped with a patented red rear light. If placed at the side of the highway and some distance from the truck, with the front lens turned toward the truck, its white light will illuminate the standing vehicle and, at the same time, the red rear light will afford a warning to moving traffic. The illumination from the lantern is also said to be sufficient to enable workmen to make necessary repairs to a disabled vehicle.

The lantern is constructed with a handle and bail for carrying. Its lens is made of heat-resisting glass, and the lantern will burn for 8 hr., it is said, on a single 8-oz. charge of carbide and one filling of the water chamber. The lantern is also supplied with a detachable spring bracket, by means of which it may be attached to any convenient part of the truck, to be lifted out for hand use or for use as an emergency warning signal when necessary.

Communications . . .

Lower Rates for Traveling Salesmen

NEW YORK

TO THE EDITOR:

I was a traveling salesman until the railways killed the two-cent rate and put on the surcharges. Thousands of salesmen stopped using the rails for buses or gave up entirely like my company caused me to do.

If you can get the mileage book back or a low rate for business men during the week, we can go out and get orders and the railroads will get more freight shipments.

FORMER TRAVELING SALESMAN

Approves Government's Recovery Program

CHICAGO

TO THE EDITOR:

We are in receipt of a summary of an editorial ("Maintaining the Improvement in Business") published in the September 9 issue of the *Railway Age*. I am very much surprised at the statements made in this editorial, which cannot but decrease confidence in our commercial future, while it is admitted that confidence is the only thing needed to restore our commercial attainments.

Your statement in regard to business men not being able to solve their problems because their importance is dependent upon what is going to be done in Washington by men who do not themselves know what they are going to do, may be an opinion of yours, but it certainly can do no good to the business situation, which we are endeavoring to improve, and furthermore I fail to see any foundation for such a statement. Following this statement are some statements which are absolutely incorrect:

"Business men are motivated principally by the desire to avoid losses and make profits. Many of them have been virtually forced by the government, at a time when they are still making losses, to increase their operating expenses without any assurance that they will get any increase in their earnings, and even at a time when the brain trusters in Washington are glibly saying that the time when business could be conducted principally to make profits is past. Furthermore, much alarm has been spread through business by the apparent tendency of the government to favor a labor policy which labor leaders throughout the country construe to mean the closed shop. In consequence, the administrators of the government's policy have succeeded in spreading fear instead of confidence through a large part of business, and the fear of losses and boycotts is not a good substitute for confidence among business men as a means of promoting recovery."

These statements are grossly misleading and will certainly tend to retard the recovery program, and I do not believe that this is your intention. The present administration is doing all in its power to restore prosperity to the railroads and other industries, and has taken us from the bottom of the worst depression the world ever knew to at least 50 per cent of normal. This has been done by the restoration of confidence.

Our foreign trade has been destroyed; our market must be the home market. Our home market cannot be restored until our unemployed are reemployed and can exercise a purchasing power. That is what the administration is trying to effect through the N.R.A.

It is much better for us and other manufacturers to pay out more money for labor to help this great cause along than to be compelled to donate a similar or larger amount to a relief association to maintain people out of work.

J. R. CARDWELL
Cardwell Westinghouse Company

NEWS

Third Meeting of 1933 Transportation Conference

Public vs. private ownership and the regulation of all interstate carriers discussed

Public versus Private Ownership of Transportation Facilities and The Regulation of Interstate Transportation were the two subjects discussed at the third meeting of the Transportation Conference of 1933 at Chicago on September 14-15. The conference addressed itself to the report of its Committee on Analysis and Research on Public vs. Private Ownership of Transportation Facilities. This report defined the extent to which public ownership is existent in the provision and maintenance of the "route or way" in coast or intercoastal transport, inland water routes, natural and artificial, and highway construction and maintenance. The report also developed the fact that with respect to the first-named group there is in addition to the ownership of the "route or way," the ownership and operation, although to a limited extent, of the vehicle actually performing the service of transportation in direct competition with private enterprise operating in these fields.

The conference also received from its committee a factual report upon the Regulation of Interstate Transportation. Following a study of these reports, both were referred back to the Committee on Analysis and Research in order that the text might be rewritten to include the suggestions made by the conference. The next meeting of the conference will be held in New York on such date in October as the chairman may fix, and will be devoted to further study on the regulation of interstate transportation.

While the formal statement issued after the meeting was vague, it was reported that the conferees were occupied chiefly in arguing the merits of the present system of government transportation control. Sharp differences of opinion were said to have arisen among the conferees over proposals for the regulation of transportation other than railroad.

Conferees at the meeting represented the following groups: The American Bankers' Association, the American Iron & Steel Institute, the American Newspaper Publishers' Association, the American Short Line Railroad Association, the Association of Railway Executives, the Association of Regulated Lake Lines, the National Association of Manufacturers, the National Association of Mutual Savings Banks, the National Industrial Conference Board, the Railway Business Association, the Security Owners' Association, the American Petroleum Institute, the Domestic Freight Forwarding Association, the Grain & Feed Dealers' National Association, the Lake Carriers' Association, the Mississippi Valley Barge Line Company, the American Railway Association, the Public Relations Committee of the Eastern Railroads and the National Lumber Manufacturers' Association.

Great Lakes Shippers' Board

The Great Lakes Shippers' Regional Advisory Board will hold its thirty-sixth regular meeting at the Statler Hotel, Detroit, Mich., on September 27.

Reduction in Crossing Accidents

Statistics for the first six months of 1933, issued by the Safety section of the American Railway Association, show the total of accidents at highway grade crossing at 1,371, a reduction of 326, compared with the same period in 1932; total fatalities 645, a reduction of 106; total injured 1,481, a reduction of 392.

No 1933 Convention of Association of Railway Electrical Engineers

The Association of Railway Electrical Engineers will not hold its annual convention this year, due to the effect of the depression on the railroads and the fact that no work has been done by the committees. The executive committee will hold its regular session at the Hotel Sherman in Chicago, on October 19, to handle the business of the association and to elect officers.

Western Roads Voting on Reduced Fares

A mail ballot is being taken among the western railroads on a proposal to establish a two-cent passenger rate in coaches, three cents in sleeping cars and the elimination of the Pullman surcharge, a questionnaire ballot having been sent out on September 15. November 1 and December 1 are being considered as dates to introduce the rates. The question of effective dates is affected by the heavy passenger movement to Chicago as a result of A Century of Progress Exposition. If the proposed rates are put in force on December 1, there will be a month in which to measure traffic movements under the standard rate of 3.6 cents, since the reduced rates to the Exposition expire on November 1.

U. S. Commerce Chamber Conducts Transport Quiz

Members asked views on water motor control—Heavy trucks favored in weight limit

The Chamber of Commerce of the United States is taking a poll of its member organizations on 18 proposals "directed toward bring about more equitable competitive conditions among the three principal forms of transportation—rail, water and highway." A number of the proposals deal with government regulation of water and highway transportation, with a view to eliminating some of the unfair competitive advantages which now obtain as between these two types of carriers and the railroads. Some of these questions have been the subject of lively controversy for many years. This is the first time an effort has been made to get a cross-section of American business opinion on the merits of the questions involved.

The referendum, it was explained, marks the second and final stage of a rounded program initiated by the Chamber for the purpose of ascertaining the consensus of business judgment on outstanding problems in the transportation field. The first phase of the program dealt primarily with questions relating to the railroads alone. The proposals submitted in the referendum now being taken are based upon a report of a representative committee of the National Chamber, following a searching study of the problems that have arisen among the three competing forms of transportation. In its report the Committee states that "unregulated competition with regulated forms of comparable transportation is unfair, contrary to the public interest in the losses which are caused, and inequitable to shippers whose interest is in dependable service and conditions."

The questionnaire includes the proposal for adoption of the size and weight limits for commercial motor vehicles as recommended by the American Association of State Highway Officials which two members of the chamber's committee opposed, holding that it represented only a highway engineering viewpoint; that it was brought in by motor vehicle interests who, themselves, had made no first-hand investigation; and that there was no evidence that the general public interest had received any consideration in the preparation of this formula.

They argued that the proposal would increase the size and weight of commercial

(*Continued on page 449*)

Railway Magazine Editors Hold Meeting at Chicago

Widespread usefulness of publications stressed by speakers at annual session

The railway magazine as an aid to the traffic department, its work in organizing railway employees for political action and as a useful agent in the revival of prosperity, were the major subjects considered at the eleventh annual meeting of the American Railway Magazine Editors' Association at Chicago on September 15-16. An address on "The Railway Magazine as an Aid to the Traffic Department," was presented by Miss Martha C. Moore of the Frisco magazine, while W. A. Crawford, editor of the Central of Georgia magazine, discussed "Organizing Railway Employees for Political Action." At a dinner on September 15, the guest speaker, Samuel O. Dunn, chairman of the Simmons-Boardman Publishing Company and editor of the *Railway Age*, spoke on "The Revival of Prosperity."

Officers elected for the ensuing year are as follows: President, T. E. Owen, editor of the Louisville & Nashville Employees' Magazine; first vice-president, C. G. Burke, associate editor of the Missouri Pacific Lines Magazine; second vice-president, Frank M. America, editor of the Erie Railroad Magazine; and secretary, J. L. James, associate editor of the Louisville & Nashville Employees' Magazine.

Mr. Dunn spoke in part as follows: "I have no serious doubt about the future of the railways of the United States, any more than I have any serious doubt about the future of the existing economic institutions of this country, in spite of the 'revolution' through which many persons proclaim that we are now passing. The American people often do foolish things but they are different from any other people on earth and, therefore, have a different way of doing things; and anybody who bases, on what other people do, a prediction as to what the American people will do, is sure to be wrong.

"I believe that the railways have a good future because of the attitude of the American people in general and the attitude of railway managers and employees in particular. There is virtually no sentiment for government ownership, and there is virtually complete accord at present between railway managers and their employees regarding certain government policies that must be adopted to give the railways and their employees a square deal. All over the country organizations of railway employees and taxpayers, who are still individualistic enough to fight their own battles, are demanding that the unfair competition to which the railways and their employees are now being subjected shall be abolished. This unfair competition exists because carriers by water, highway and air are subsidized at the cost of the taxpayers, work their employees much longer hours for much lower wages than do the railways and are not regulated as the railways are. It is not the voice of Wall street, but the voice of Main street that is demanding that these conditions be rectified; and public men can always hear the voice of the rugged individualists of Main street.

"We are well on the way toward a revival of prosperity which will be brought about principally by that 'rugged individualism' of all classes of Americans which many intellectuals think is extinct because they lack it themselves; and the railways and their employees will contribute their share toward the revival and enjoy their share of the benefits of it."

Correction

The item published in the *Railway Age* of September 16 to the effect that representatives of the Reconstruction Finance Corporation had requested the appointment of Kenneth F. Burgess as an "impartial trustee" of the Chicago, Burlington & Quincy is incorrect, the representatives having requested Mr. Burgess' appointment as "impartial trustee" of the Chicago & Eastern Illinois.

Continuation of Reduced Fare Experiments Authorized

The Interstate Commerce Commission has issued the necessary authorizations for the continuance for an additional six months period ending March 31, 1934, of the reduced passenger fares put into effect experimentally for six months earlier in the year by the Louisville & Nashville, the Mobile & Ohio, the Gulf, Mobile & Northern, the Nashville, Chattanooga & St. Louis, the Southern, and the Baltimore & Ohio.

Alive Because of an Accident

Are you alive today because of an accident? This question is the text of the circular which the Safety section of the American Railway Association has issued for the guidance of safety committees during the month of October.

Did you step on a track without looking both ways? Did you try to mount a moving caboose with packages in your hands? Did you walk under a suspended load? If questions of this kind have to be answered in the negative, you may say you are alive by accident. The only safe rule is to assume that when indulging in such careless practices you must expect to be injured.

The Binghamton Collision

The third car from the rear in train No. 8, of the Erie, which figured in the rear collision at Binghamton, N. Y., on September 9, reported in the *Railway Age* of September 9, page 380, was a steel underframe car, and weighed 78,800 lb., or about the same as a steel coach. It appears that the collision raised the rear end of the last car, depressing the forward end of the last car and the rear end of the second last, thereby raising the front end of the latter, resulting in breaking both drawbars between the second and third rear cars and permitting the second to ride over the third. It is the consensus of opinion that the same telescoping would have occurred had both cars been made of steel.

Utah Regulating Peddler Trucks and Motor Carriers

Recently-enacted laws give state more effective control of highway operators

Two laws designed to render more effective the state's control over motor carrier operations were recently passed in Utah. One is a regulatory law while the other is expected to mitigate the peddler truck's demoralizing influence on produce markets. The former gives to the Utah Public Utilities Commission comprehensive powers to control the activities of all buses and trucks operated for hire and assesses new fees on such operators for their use of the highways; the latter provides for the licensing of produce dealers and regulation of their operations by the State Board of Agriculture.

The regulatory law, which deals with both common and contract carriers of persons or property, exempts from its provisions all intra-city vehicles, school buses, and state or municipally-operated vehicles. Common carriers are required to obtain certificates of convenience and necessity in connection with the granting of which it is stipulated that "If the commission finds that the applicant is financially unable to properly perform the service sought under the certificate, or that the highway over which he proposes to operate is already sufficiently burdened with traffic, or that the service furnished by existing transportation facilities is reasonably adequate and is capable of serving the needs and convenience of the public at reasonable rates, the commission shall not grant such certificate."

The commission's regulatory powers over common carriers are comprehensive; they extend to the fixing of rates, the regulation of facilities, accounts, service, schedules, abandonments and safety of operations. In addition the commission is directed to exercise its supervisory powers "so as to prevent unnecessary duplication of service between these common motor carriers, and between them and the lines of competing steam and electric railroads;" also the commission "may require the co-ordination of the service and schedules of competing carriers by motor vehicles or electric and steam railroads."

The commission's control over contract carriers includes authority to fix reasonable maximum or minimum rates, regulate accounts, schedules, services and generally "to supervise and regulate contract motor carriers in all matters affecting the relationship between such contract motor carriers and the shipping public."

The section relating to fees for the use of the highway fixes for common carrier and contract trucks a charge of ⅜ cent per net ton-mile operated on hard-surfaced roads and ¼ cent per net ton-mile on all other roads. Buses are required to pay, respectively, 2.5 mills and one mill per passenger-mile.

These special payments are in addition to license fees or taxes otherwise imposed on motor carriers and are earmarked "for the administration of this act and for the

maintenance, repair and reconstruction of public highways."

Interstate motor carriers are required under the law to obtain licenses but such are issued as a matter of right when certain stipulated data are filed with the commission and arrangements are made for payment of the above-mentioned special fees.

Remaining sections set forth, among others, such requirements as those relating to liability insurance and indemnity bonds and minimum age for drivers. Drivers employed on common carrier vehicles must be 21 years of age while those employed by contract operators must be 18 years old.

The law providing for the licensing of produce dealers, truckers and peddlers forbids those licensed as retailers from engaging in a commission business without having first obtained also a commission license. Co-operative associations are exempt. The State Board of Agriculture is empowered to prescribe rules for the licensing of produce dealers and peddlers. The license fee is $50 and the board has the power to reject or revoke an application if the applicant or licensee "is not financially responsible or has been guilty of unfair or fraudulent dealing" or has failed to meet his obligations.

It is further provided that the issuance of a license to "itinerant trucker, motor truck jobber, peddler, or merchant trucker, shall be an authorization for the operation of one vehicle only and that if such licensee desires to operate additional vehicles at the same time he shall make application to the state board of agriculture, in writing, to do so and shall be required to procure license and furnish bond for each additional truck or vehicle so used." Combinations of dealers or peddlers for the purpose of evading individual payment of the license fee are prohibited.

Other provisions require a surety bond and stipulate that records, subject to examination by the board, must be kept by the licensee to cover the following facts: (1) Name and address of the producer or shipper; (2) date of receipt of each consignment; (3) kind and quantity of products received; (4) agreed purchase price or commission charge; (5) date of sale; (6) price at which sold; (7) an itemized statement of the charges to be paid by the producer in connection with the sale.

W. L. Bean Made Assistant to Boatner

W. L. Bean has been appointed mechanical assistant to V. V. Boatner, western regional director on the staff of Joseph B. Eastman, federal co-ordinator of transportation. Mr. Bean, who will be located at Chicago, will be in charge of a general survey of mechanical matters on the railroads of the Western region that is to be undertaken as a part of the program of the co-ordinator. At the time of his appointment, Mr. Bean was western representative of the Leslie Company, Lyndhurst, N. J. He had formerly served with the mechanical department of the Atchison, Topeka & Santa Fe, as chief engineer in charge of design; with the Oxweld Railroad Service Company, and with the mechanical department of the New York, New Haven & Hartford, of which road he was appointed mechanical manager in 1925. He has been connected with the Leslie Company since 1929.

N.Y.C. Time-Table Changes

Numerous schedules of through trains will be shortened by the New York Central beginning with the new time-table's effective date, September 24. The Wolverine, west-bound, leaving New York at 5:45 p. m., will run through to Chicago in 20 hrs. 15 min.; the Chicagoan, (10:40 p. m.), in 19 hrs. 50 min.; the Iroquois, (11:45 p. m.), 20 hrs. 45 min.; the Exposition Flyer, (12:45 p. m.), 20 hrs. 30 min.

Several east-bound trains will be similarly quickened. The Seneca will leave Buffalo for New York at 9 a. m. instead of 7:30 and will run through in 1 hr. 25 min. less time than heretofore.

Atlantic States Shippers' Board

The Atlantic States Shippers' Advisory Board will hold its thirty-second regular meeting at the Bellevue-Stratford Hotel, Philadelphia, Pa., on October 5. At a luncheon which will be held in conjunction with the meeting, C. L. Bardo, president of the New York Shipbuilding Company, will be the principal speaker. One of the features of the board meeting will be an exhibit prepared by the Shipper and Railroad sections of the Freight Loss and Damage Prevention Committee, showing various types of containers, methods of packing, preparation of goods for shipment and the principles involved in the loading, bracing and stowing of various commodities.

Club Meetings

The American Association of Freight Traffic Officers will hold its annual meeting at Baltimore, Md., on October 25, in conjunction with the meeting of the Associated Traffic Clubs of America.

The New England Railroad Club will hold its next meeting at the University Club, Boston, on Tuesday evening, October 10. The speaker will be Samuel O. Dunn, chairman of the board, Simmons-Boardman Publishing Company.

The Railroad Club of Pittsburgh, (Pa.) will hold its next meeting at the Fort Pitt Hotel, Pittsburgh, on Thursday evening, September 28. Lawrence Richardson, Boston & Maine, will present a paper on Analysis of Equipment Repairs.

The Toronto (Ont.) Railway Club will hold its next meeting at the Royal York Hotel, Toronto, on Friday evening, October 6. The speaker will be A. A. Gardiner, assistant general passenger traffic manager of the Canadian National.

P. R. R. Plans System-Wide Store-Door Service for L. C. L.

Plans are being formulated by the Pennsylvania for the installation at an early date of store-door collection and delivery service for l. c. l. freight at all points of its system. While details are as yet unavailable, the P. R. R. has notified other roads of its intention to inaugurate the service and is now engaged in the preparation of necessary tariffs.

The limits of the service have not been determined upon but it is expected that, while the service will be available at all points served by the P. R. R., some origin-territory mileage limit will be placed on l. c. l. freight eligible for pick-up and delivery. Whether or not the charge will be made in addition to the line-haul rate also remains to be determined.

The Pennsylvania has, since May 1, been providing store-door collection and delivery in New York for both carload and l. c. l. freight. This New York plan which involves an additional charge over the line-haul rate was described in the *Railway Age*, of April 22, page 597.

Additional Allotment for Upper Mississippi River

An additional allotment of $22,000,000 for the construction of locks and dams on the upper Mississippi, where the need of employment is said to be pressing, has been announced by Federal Administrator of Public Works Harold L. Ickes. This allotment is in addition to an authorization of $11,500,000 previously made by the Administration for the dredging of a nine-foot channel on the upper Mississippi between St. Louis and Minneapolis as part of a comprehensive program of river improvements. The total cost of the upper Mississippi river project is estimated at $124,000,000.

Plans for the dredging of the channel have already been completed by the Army Engineering Corps, but the locks to be built at once under the new allotment have not yet been selected, although the most available sites have been inspected and a decision is to be reached quickly by the Army Engineering Corps. Secretary of War Dern reported that some Government barge lines on the river had suspended operations because of low water in the absence of the improvements.

Application of K.C.S. Wage Plan Postponed

The simplified wage plan of the Kansas City Southern, which proposes to replace the old conductors' and locomotive enginemen's agreements covering wages and working conditions with new contracts providing for compensation on a simple time basis, has been placed in effect by the management as of September 15, but its actual application will not take place until March 1, 1934. The K.C.S. wage plan, which has attracted wide attention, was the basis of a strike vote among the affected train and engine service employees last spring, resulting in the appointment by President Roosevelt of a fact-finding board, which subsequently reported on the matter to him. The President, in a letter to C. E. Johnston, president of the railroad, interposed no objection to the adoption of the plan by the management, but expressed a desire that further action in the matter be postponed until next year. Mr. Johnston said that the management felt justified in putting the wage plan into effect in view of the findings of the President's board; but he decided to defer the matter in a spirit of "co-operation with the President of the United States."

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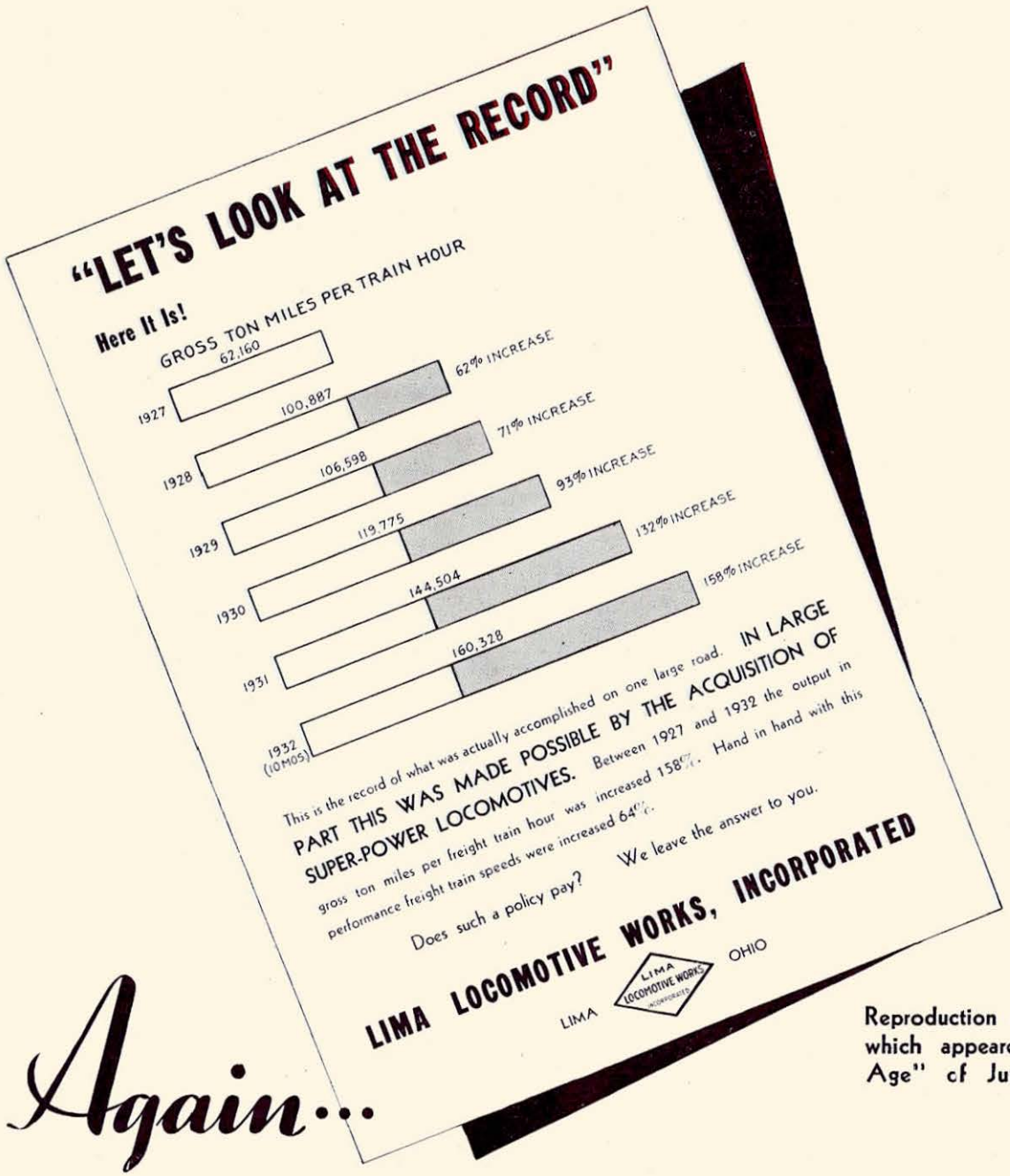
"LET'S LOOK AT THE RECORD"
Here It Is!
GROSS TON MILES PER TRAIN HOUR
1927 62,160
1928 100,887 62% INCREASE
1929 106,598 71% INCREASE
1930 119,775 93% INCREASE
1931 144,504 132% INCREASE
1932 (10 MOS) 160,328 158% INCREASE
This is the record of what was actually accomplished on one large road. IN LARGE PART THIS WAS MADE POSSIBLE BY THE ACQUISITION OF SUPER-POWER LOCOMOTIVES. Between 1927 and 1932 the output in gross ton miles per freight train hour was increased 158%. Hand in hand with this performance freight train speeds were increased 64%.
Does such a policy pay? We leave the answer to you.
LIMA LOCOMOTIVE WORKS, INCORPORATED
LIMA OHIO

Reproduction of advertisement which appeared in "Railway Age" of June 24th, 1933

Again...

"LET'S LOOK AT THE RECORD"

From "The New York Times", August, 1933, concerning the same railroad company:

> "Directors . . . . . today declared a quarterly dividend of 70 cents a share for the third quarter of the year, against the former basis of 62½ cents.
>
> "The company paid dividends at the annual rate of $2.50 a share on its $25 par stock through the depression and recently its earnings have increased sharply."

The relationship between earnings and a progressive motive power policy is strikingly exemplified in the case of this road.

And so again we ask, DOES A SUPER-POWER POLICY PAY? And again, WE LEAVE THE ANSWER TO YOU.

LIMA LOCOMOTIVE WORKS INCORPORATED
LIMA, OHIO

Merger of National Truck Organizations Proposed

A plan for an immediate merger of the American Highway Freight Association and the Federated Truck Associations of America, both recently organized as rival national organizations to represent the trucking industry, into a compromise organization to be known as the American Trucking Associations, Inc., to include all the members of both, is proposed in a bulletin sent out from the two organizations on September 19 to every truck owner association in the country. The Bulletin was signed by Ted V. Rodgers, president of the A. H. F. A., and J. W. Blood, president of the F. T. A., and outlined a plan recommended by the central and executive committees of both organizations that have been meeting in Washington for several weeks on questions relating to organization and the formulation of codes to be submitted to the National Recovery Administration. An earlier plan for a merger failed of approval.

"The national organization fight between the American Highway Freight Association and the Federated Truck Associations of America is getting neither side anywhere," the bulletin said. "What is more important it is not doing the truck industry any good. It should be settled immediately. The two organizations filed two codes. The contact committees were called together by the Administration and requested to combine their codes. This led to a series of conferences at which a combination code has been made. Hearings on this combined code will be held by the National Recovery Administration in about two weeks and in a short time a code will be approved. Unity of action is essential in presenting the case for the trucking industry at the hearings and in the much more important matter of administering and enforcing the code after it has gone into effect. Leaders in both organizations have conferred and believe they have found a fair solution that will be suitable to all interests. Differences of opinion, which after all are not great, have been thoroughly discussed and such differences have been ironed out. Any clash of personalities which may exist has been handled by setting up officers and committees including everyone now holding office in either organization, and by adding names to create a numerical balance, when necessary. A fair method of selecting a permanent control board, to be known as an executive committee, has been provided in new by-laws which are designed to preserve the best features of the by-laws of both organizations."

Procedure has been prepared to create the merger by ratifying the election of a roster of officers and approving a set of by-laws by mail, without calling another national convention, and the various local associations are urged to call at once special emergency meetings of their boards of directors to vote on the detail proposals submitted with the bulletin and report by telegraph and mail. The recommendations are the result of conferences between two special code committees and were approved by the central and executive committees through telegraph and telephone communications with the two Washington offices.

The American Highway Freight Association was the first of the two to organize and attempted to represent particularly the for-hire truckers. Its leaders were largely men who favored a policy of regulation of the trucking industry. The Federated Truck Associations was organized largely as the result of efforts made by representatives of the truck manufacturers and included many representatives of private and contract carriers, so that it was regarded as opposed to the idea of regulation. The N.R.A., through Deputy Administrator Malcolm Muir, has from the start taken the position that there should be one code for the industry and in general a similar position has been taken by other officials of the N.R.A. as to other industries in bringing about a combination of numerous codes submitted by various branches of an industry.

Third Canadian Low-Rate Excursion

The third one-cent-a-mile excursion this year was placed in effect by the Canadian Pacific and the Canadian National from September 16-26. Tickets are good from all stations west of the head of the lakes to all stations east of the head of the lakes and vice versa. Tickets are good for 30 days from the date of sale.

Water Lines Agree to Appoint Co-Operative Committees

At a meeting of representatives of water lines held in Washington on September 20 it was agreed that the various water lines would organize regional committees representing the Atlantic coastwise, United States intercoastal, Gulf intercoastal, Pacific coastwise, New York Barge Canal, Great Lakes, Mississippi River system, and Gulf and tributary rivers lines, in accordance with the plan discussed at a conference with Co-ordinator Eastman on September 6 for the purpose of promoting stability in rates and discouraging destructive competition between the water and railroad lines. The meeting was called by General Ashburn, president of the Inland Waterways Corporation. The regional committees are then to designate one member each as representatives of a general committee to be called by General Ashburn at an early date from which will be selected a smaller committee to deal with a committee representing the railroads, with the federal co-ordinator as umpire for any differences. The idea is that the rail and water lines all keep each other fully advised of all proposed reductions in rates for competitive purposes and discuss such proposed changes freely before attempting to put them into effect.

General Ashburn pointed out that the plan is not a new one but is the outcome of efforts running back several months. He said that he and L. W. Childress, president of the Mississippi Valley Barge Line, had entered into an agreement some time ago with L. A. Downs, president of the Illinois Central, and L. W. Baldwin, president of the Missouri Pacific, that their respective lines would not cut rates without first notifying the others and giving them a chance to discuss the proposal before action was taken. Another speaker pointed out that the plan was not originated by Co-ordinator Eastman but that he had been importuned to take up the matter by a group of water line operators.

General Atterbury's Salary Reduced to $60,000 at Own Request

General W. W. Atterbury, president of the Pennsylvania, on September 20 telegraphed to Co-ordinator Eastman advising him that the board of directors of the Pennsylvania, at a meeting on September 13, at his request had fixed the salary of the president at $60,000 a year, effective September 1, until further action of the board. Mr. Eastman had recently announced that the three regional co-ordinating committees representing the railroads had advised him that they believed that the railroads of the country were willing to reduce salaries so that $60,000 would be the maximum, "with one possible exception where a definite conclusion is still to be reached." General Atterbury's telegram said that the meeting of the board on September 13 was the first such meeting to be held since Mr. Eastman's statement of July 14 suggesting reductions of executive salaries. He also quoted from a resolution adopted by the board stating that "whereas this board is of the opinion that having made reasonable revision of the salaries of the executives and other officers of the company it should not surrender its right to determine the compensation of its officers," nevertheless under the existing circumstances and in deference to the wishes of its president it had taken the action requested. He also called attention to the fact that prior to this action by the board it had since 1929 taken action which had resulted in a reduction of 46 per cent of the number of officers and 52.5 per cent in the total compensation paid to officers.

Along with the text of General Atterbury's telegram there was also made public a copy of a letter which the P. R. R. president had sent to Co-ordinator Eastman on August 14. This letter revealed that, following the co-ordinator's July 14 statement on salaries, the Eastern Regional Co-ordinating Committee engaged Price, Waterhouse & Company "to study the question of official salaries on the railroads." Pending the completion of this study, which, Mr. Atterbury anticipated in the letter, would be completed about September 1, he was not prepared to join his colleagues on the regional committees in making, as they did at a joint meeting on August 14, a definite recommendation on the salary question.

Mr. Atterbury further pointed out in this latter connection that it was the duty of the regional committees to "get as much light on this subject as possible" and he suggested further that, while, as the co-ordinator had stated, official salaries represent "an insignificant item as compared to the sum total of railroad expenses", nevertheless the effect "of increasing or reducing official salaries on any individual railroad may have a far reaching influence upon that which we are aiming at, namely, more efficient and economical operation."

In addition to its survey of the salary question for the Eastern Regional Co-ordinating Committee, Price, Waterhouse & Company made a like study for the P. R. R. directors. In the report on this latter the investigators reached general conclusions different from those of Mr. Eastman.

"Like him (Mr. Eastman), we do not

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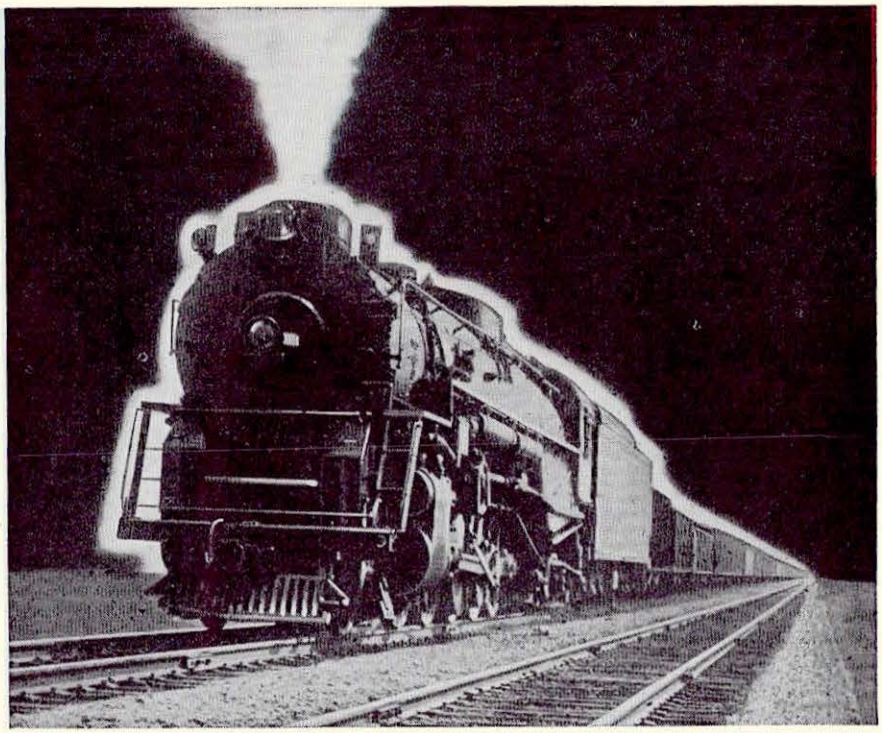


FASTER FREIGHT SERVICE

Needs Modern Locomotives

"There isn't a single slow freight train left on our railroad." This statement of an operating officer is typical of the far-reaching improvements in railroad service.

What has made this possible? For one thing, the adaptability of railroad officers to the new conditions which make speed the primary consideration in routing traffic.

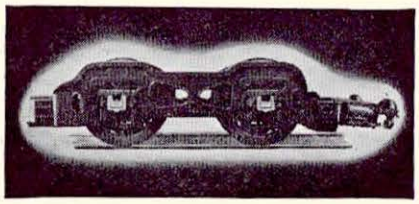
Again, facilities for fast freight transportation. Booster-equipped, superpower locomotives can haul a heavy load at passenger speeds and do so at a lower cost.

The Locomotive Booster is fundamental in securing maximum power per pound of weight.

It provides a reserve of power for maximum tractive effort in starting and on grades. Use it and the main locomotive can then be designed with a lower piston speed and thrust and still have ample power to haul the load at operating speeds. The lower piston thrust means lower all-round maintenance.

Here is a saving not always credited to The Locomotive Booster, yet this same maintenance economy is sufficient in itself to justify Booster application.

Franklin has information on this phase of Booster economies it would be glad to present to you.



FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

regard the present system of executive compensation in the railroads as satisfactory," the report said. "In our view, however, the direction which reform should take should be not a general reduction of compensation, or even a reduction of the salaries at or near the top. It should, we believe, look rather to bringing about more liberal compensation and more rapid promotion for individuals of marked ability, thus permitting an earlier retirement than under the existing system.

"In almost all fields of activity, some form of incentive to efficiency in addition to the prospect of promotion is offered to executives, and very commonly, also, in the lower ranks of organizations. In the case of railroads, hope of promotion is the only incentive offered, and as our report to the Co-ordinating Committee indicates, the number of reasonably well paid positions is extremely small in comparison with other branches of industry."

Of the P. R. R., the Price, Waterhouse report, in closing, said: "The presidency of your company may be regarded as the leading railroad position in the United States. Unless such a position is to command even in times like the present a salary in the neighborhood of $100,000, the whole system governing the determination of rewards for conspicuous achievement or for services of an exceptionally responsible character, must be deemed to be in question.

"It is no part of our function to discuss such an issue as this, but apart therefrom we have no hesitation in saying that with a wide knowledge of the compensation paid for services of various kinds here and abroad, we regard the compensation as entirely reasonable and (as our report to the Co-ordinating Committee shows in some detail) not high in comparison with that being received by others filling positions of equal or less responsibility."

It has been calculated that reduction of all salaries of railway officers in excess of $60,000 to that figure would amount to $208,722.50, or seven thousandths of one per cent of the operating revenues for the past year, but Mr. Eastman has also requested that reduction be made also in salaries below that figure.

Pennsylvania Trains Faster

With the beginning of its new timetable on September 24, the Pennsylvania's hourly trains between New York and Philadelphia, leaving each city on the even hour, all day, will each run through in 1 hr. 50 min.; and numerous trains between New York and Washington will be made faster. Of the 44 trains on the New York-Washington, D. C., line, 18 will make the run of 226 miles between 4 hrs. 15 min. and 4 hrs. 30 min. The Congressional Limited and the Senator make the time both ways in 4 hrs. 15 min. All of the through trains to New England are made somewhat faster than heretofore.

A new train, the Legislator, will leave Washington at 7 a. m. for New York, running through in 4 hrs. 20 min., and another, the Constitution, will leave New York at 6:30 p. m. for Washington, and run through in 4 hrs. 25 min. All of the daylight trains between New York and Washington will run through in 4 hrs. 50 min. or less. From 7 a. m. to 8 p. m., a high-speed train will leave Washington for New York every hour, and southbound, these trains will leave New York from 7:30 a. m. every hour with one exception, the latter being a train which will start at 8:10 a. m. instead of at 8:30.

Faster Trains on New Haven

The New York, New Haven & Hartford's through trains between New York and Boston over the Shore line beginning with the new time table, September 24, will have their running time shortened by from 5 to 25 min. Also, a new train from Boston to New York, starting at 6 a. m., will arrive in New York at 11:35, and a new one in the opposite direction, starting at 4 p. m., will arrive at 9:35. The two fastest each way continue to go through in 4¾ hours.

Numerous trains all over the New Haven system are to be made somewhat faster. The Colonial, heretofore leaving Boston at 9 a. m., will run through to Washington in 30 minutes less time than at present.

The passenger trains of the New Haven system, always running by Eastern standard time, have been run during the summer one hour earlier than normal, to accommodate cities where daylight saving time was in use; and in this connection it is noted that certain through trains to and from the West are not now being changed one hour; though some of them will have slight adjustments in their schedules.

N.R.A. Code Approved for Bituminous Coal

An increase in the price of coal is expected to result from the operation of the code of fair competition for the bituminous coal industry approved by President Roosevelt on September 18 after weeks of negotiation and controversy between the National Recovery Administration and representatives of the coal operators and the United Mine Workers. The code, which represents an agreement not only between the coal operators and the President but also between them and the miners' union, includes provisions governing wages, prices, and adjustment of labor relations. It was signed by representatives of the operators in most of the coal-producing sections but with some exceptions pending the adjustment of additional details of its provisions. The code declares it to be an unfair competitive practice to sell coal under a fair market price necessary to pay the minimum wages established and to furnish employment for labor, and, in order to determine the fair market price, provides for the establishment of marketing agencies which, when acting for at least two-thirds of the commercial tonnage of any coal district or group of districts, may announce minimum prices, subject to approval by a representative of the President. Provision is made for the establishment of a national bituminous coal industrial board, including representatives of the President, and regional and national coal labor boards including representatives of employers, employees, and the President.

The National Recovery Administrator has approved temporary substitutes for the President's Reemployment Agreement for the scientific apparatus manufacturing industry, the oxy-acetylene manufacturing industry, and the haulers for carloading and forwarding companies.

A hearing on the proposed code for the chemical manufacturing industry was held on September 14 before Deputy Administrator C. C. Williams. A hearing on the code for the cement industry proposed by the Cement Institute was held on September 15 before Deputy Administrator Malcolm Muir. The American Paint & Varnish Manufacturers' Association and the National Paint, Oil and Varnish Association have proposed a code which has been set for hearing on September 26 before Deputy Administrator Williams. The Shovel, Dragline and Crane Institute has submitted a proposed code which has been set for hearing on September 29 before Deputy Administrator Muir.

A hearing on the fabricated metals code has been set for October 5 before Deputy H. O. King, and one for the malleable iron industry for October 2 before Deputy King.

Low As Well As High Salaries Reduced

The campaign of the federal government to reduce the salaries of railway officers, as well as those of some other corporations to some extent, is not confined to the salaries in the higher brackets but is reaching down even to those of $6,000 a year. The first manifestation of this new policy of the government was the law authorizing the directors of the Reconstruction Finance Corporation to require salary reductions as a condition of their authorization of loans. It was followed by the requests made by Co-ordinator Eastman for a voluntary reduction in salaries, the first of which referred to the higher salaries and the second of which urged corresponding reductions in the lower payments. The Interstate Commerce Commission has recently made public correspondence with the R. F. C. and the Denver & Rio Grande Western relating to the $950,000 loan authorized in July in which the corporation imposed conditions as to the salaries and also required the company to agree to observe "all lawful orders of the federal co-ordinator of railroads." The scale of salaries imposed provided for $8,000 each for the chairman of the board and the chairman of the executive committee, $36,000 for the president, $13,500 for the general counsel, and a 20 per cent reduction for those paid $6,000 or more unless they had already been reduced that much.

July Freight Traffic 38.8 Per Cent Up From Last Year

The volume of freight traffic handled by the Class I railroads in July, measured in net ton-miles, showed an increase of 38.8 per cent above that of the same month in 1932, according to reports compiled by the Bureau of Railway Economics. It amounted to 26,459,634,000 net ton-miles, compared with 19,065,342,000 net ton-miles in July, 1932. Compared with the same month in 1931, however, freight traffic in July this year was a reduction of 3,815,-

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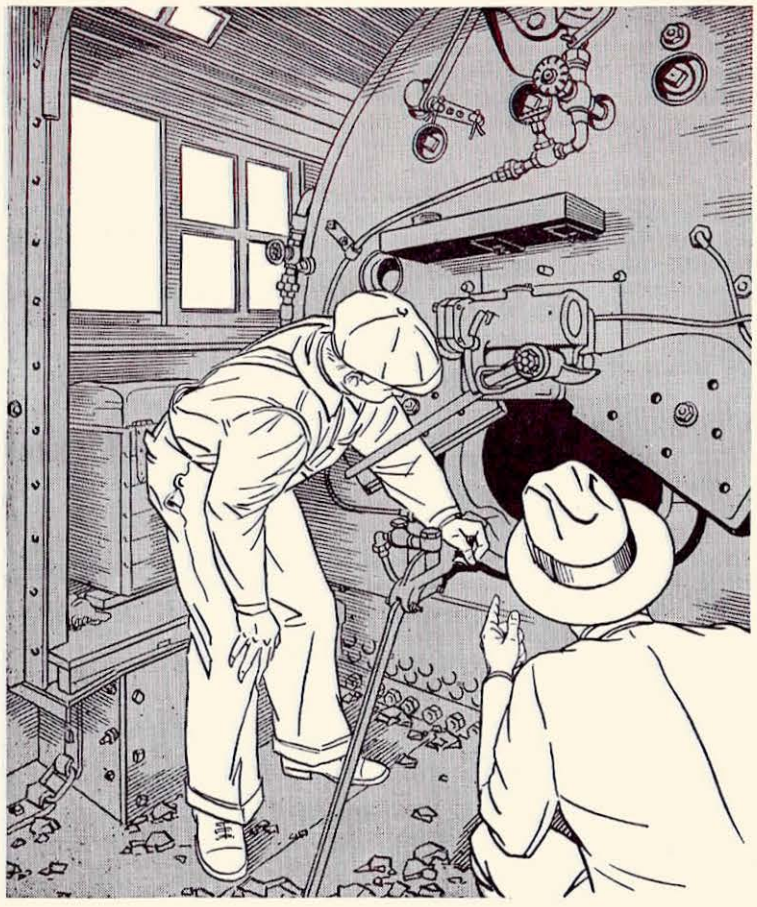

Help the ARCH Get Started *Right*

American Arch Company service starts when the new locomotives are on the drawing board. Assisted by engineers of American Arch Company, the Arch gets off to a proper start by being properly designed. Then when the new power arrives, an American Arch Company service man is on hand to welcome it.

He checks the Arch; the style of brick and the spacing of Arch tubes.

There's More to SECURITY ARCHES *Than Just Brick*

Storekeepers are visited to be sure that the desired Arch brick are available when repairs are needed.

From the Arch standpoint, everything possible is done to smooth the way for the new power.

This is just one of the functions of American Arch Company service men but many mechanical officers gladly testify as to its value in getting new power off to a good start.

HARBISON-WALKER REFRACTORIES CO.

Refractory Specialists

NRA MEMBER U.S. WE DO OUR PART

AMERICAN ARCH CO.
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Locomotive Combustion Specialists » » »

947,000 net ton-miles or 12.6 per cent. In the Eastern district, the freight traffic handled in July was an increase of 45.8 per cent compared with the same month in 1932, while the Southern district reported an increase of 43 per cent, and the Western district, an increase of 28 per cent.

Freight traffic in the first seven months of 1933 amounted to 150,189,406,000 net ton-miles, an increase of 3,162,529,000 net ton-miles, or 2.2 per cent, over that of the corresponding period in 1932, and a reduction of 54,430,086,000 net ton-miles, or 26.6 per cent, under that of the corresponding period in 1931.

Railroads in the Eastern district for the seven months reported an increase of 2.7 per cent compared with the same period in 1932, while the Southern district reported an increase of 5.2 per cent. The Western district reported an increase of three-tenths of one per cent.

Canadian Wage Dispute

General chairmen of the trainmen's, enginemen's and operators' unions met in Montreal last week to receive and tabulate the strike vote of their membership throughout the country, taken at the conclusion of their negotiations with the railway companies to determine the stand against the second wage cut of 10 per cent which the unions refused to accept, although it has already been put into effect. It was learned that a straw ballot has indicated that the employees have voted in overwhelming numbers in favor of a strike rather than accept a rate of pay 20 per cent less than the basic scale.

It was stated that the dismissal by the Brotherhood of Railroad Trainmen of Senator James Murdock from the position of Canadian vice-president of that organization will make no difference in the negotiations although he has heretofore been spokesman for the unions. Senator Murdock's dismissal, it is said, resulted from a disagreement between him and A. F. Whitney, president of the B. of R. T., over the insurance policies of the brotherhood.

The Canadian vice-presidents of the enginemen and trainmen have announced that John Doull, former attorney-general of the recently resigned government of the Province of Nova Scotia has been retained to commence in that province, New Brunswick and Prince Edward Island suits against the Canadian Pacific and Canadian National for the recovery of wages claimed to have been withheld by the companies to such employees as from February 1 up to the time of suit. Like proceedings will be instituted in all the other provinces, they announced.

The vice-presidents outlined their position in part as follows:

"In 1932 the employees of the running trades allege, an agreement was made, to expire January 31, 1933, whereby the basic rates were expressly continued in effect, but the companies were authorized to deduct 10 per cent for not longer than the agreed period, from each employee's monthly pay check. This agreement was not renewed, but, the employees allege, the companies continued to impose the 10 per cent deduction until May 1, 1933, when they put into effect on this occasion, without consent, a further deduction of 10 per cent, still purporting, however, to maintain the basic rates in force.

"A board appointed under the Lemieux Act had by a majority approved the latter deduction, but a minority report of W. F. O'Connor, K.C., the representative of the employees on the board, pointed out that as the proceedings before the board (as both parties before it had contended, the majority of the board concurring), contemplated the continuance in effect of the basic rates, with a 20 per cent deduction from each employee's lawful pay check, and not a reduction of the wages lawfully payable to him, no pronouncement of the board, unless agreed to (as in 1932-33) by or on behalf of each employee could, pursuant to the terms of the Lemieux Act, authorize any change in the then existing conditions as to wages, which was that the basic rates were payable, or authorize any deduction at all from any pay check of any employee. The employees refused to accept the majority award of the board or the further deduction. The companies nevertheless applied it."

U. S. Chamber of Commerce Conducts Transport Quiz

(*Continued from page 444*)

vehicles allowed by many states, that comparatively few of the existing bridges and roads will carry the gross weights recommended and that to handle such weights would require expenditure of hundreds of millions of dollars for further highway improvement for accommodation of a relatively few heavy commercial vehicles.

The questions submitted fall under three main headings—water transportation in domestic commerce, highway transportation in intrastate commerce, and interstate regulation. They are as follows:

Water Transportation in Domestic Commerce

1. All common carriers should be required to obtain certificates of public convenience and necessity.
2. Common carriers should be subject to regulation, as to rates, in port-to-port rates.
3. All vessels which are not common carriers and which accept cargo for hire should be required to charge the established common-carrier rates.
4. Regulation should require that the rates of both water and rail carriers to competitive points should be adequately compensatory to the carriers making the rates.
5. Government operation of commercial water transportation should be discontinued.

Highway Transportation in Intrastate Commerce

6. Each state should put into effect the standards of the American Association of State Highway Officials as to size, weight and speed of vehicles.
7. Motor buses and other vehicles carrying passengers for hire should pay a special user tax in the form of a mileage tax, graduated according to seating capacity.
8. Motor trucks should pay a special user tax reflecting fairly the demands each makes upon the highways.
9. The gasoline tax should be kept down to a point not encouraging wholesale evasion.
10. The gasoline tax should be levied only by states.
11. States should enter into reciprocal agreements for issuance of special licenses at equitable rates to commercial vehicles out of their home states.
12. Intrastate motor carriers for hire, both common and contract, should be required to obtain permits to operate.
13. Intrastate motor carriers for hire, both common and contract, should, under regulation be required to file, post and adhere to rules that are just, reasonable and non-discriminatory among shippers.
14. All commercial users of highways should be required to establish financial responsibility for public liability and all common carriers also for liability with respect to passengers and cargo.
15. Safety and fair conditions of competition require that hours of service of operators of commercial motor vehicles on highways should be reasonably limited by public authority.

Interstate Regulation

16. There should be the same degree of regulation by Congress of interstate motor carriers as has been recommended to the states for intrastate carriers, as to permits to operate, rates, financial responsibility and hours of service.
17. The interstate regulatory authority should act as an appellate body, with provision for initial delegation of authority to boards of state regulatory bodies from states affected by each case that arises.
18. Section 500 of the Transportation Act of 1920 should be construed as a declaration by Congress of the importance to the public of the major forms of transportation, without preference for rail or water transportation over highway transportation.

Equipment and Supplies

FREIGHT CARS

THE INLAND STEEL COMPANY has ordered 12 flat cars of 75 tons' capacity from the General American Transportation Corporation.

THE ELECTRO-METALLURGICAL COMPANY has ordered six steel hopper cars of 50 tons' capacity from the American Car & Foundry Company.

IRON AND STEEL

THE NEW YORK CENTRAL will have 8,230 tons of steel rail rolled immediately. The total rail ordered this year for this road was 17,530 tons distributed as follows: Illinois Steel Company, 7,860 tons; Bethlehem Steel Company, 6,090 tons; Inland Steel Company, 1,790 tons, and Algoma Steel Corporation, 1,790 tons. The *Railway Age* of May 13 reported New York Central rail orders for 9,000 tons, while the issue for June 10 reported orders for 8,290 tons.

MISCELLANEOUS

THE PENNSYLVANIA has placed with the Lamson Company, conveyor builders of Syracuse, N. Y., an order for Westinghouse Electric & Manufacturing Company gear motors and control equipment for the mail bag conveyor system in its new Thirtieth street station at Philadelphia, Pa.

THE LOUISVILLE & NASHVILLE, reported in the *Railway Age* of September 9 as planning to dismantle a number of locomotives and freight cars, has in that connection sold 4,380 units of this obsolete and depreciated rolling stock to be dismantled and disposed of as scrap. Included in the sale are 251 locomotives, 3,671 freight cars and 368 units of work equipment—all obsolete stock of small capacity unsuitable for service in modern trains. The cars are of various classes of wooden equipment. The original cost of the entire lot was approximately $7,000,000, but this value had been largely depreciated at the time of the sale. The work of dismantling was started by the purchaser in the railroad's plant at South Louisville, Ky., September 1.

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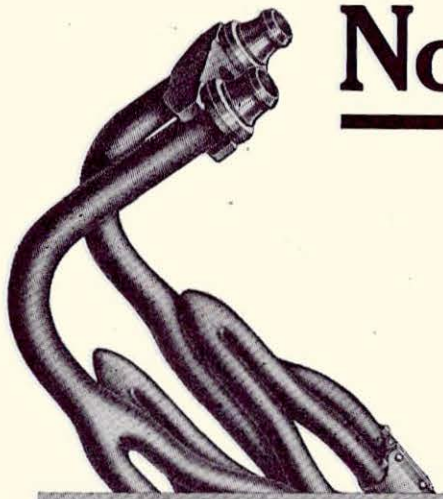
There Is

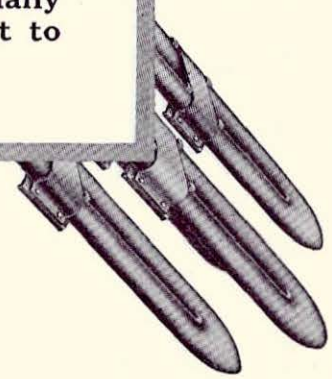
No Comparison



The process of remanufacturing superheater units should not be confused with any other means of reconditioning unserviceable units. It is a distinct method of rebuilding units which can be done only with special and extensive equipment operated by men long experienced in this type of work.

Superheater units, after being remanufactured, are so nearly like brand new units, that, except for the fact that they are painted red, it would be next to impossible to distinguish them.

Remanufactured units give the same high-efficiency of service for a period of many years — because they have been rebuilt to proper proportions.



THE SUPERHEATER COMPANY

Representative of American Throttle Company, Inc.

60 East 42nd Street
NEW YORK

ELESCO

Peoples Gas Building
CHICAGO

A-897

CANADA: The Superheater Company, Limited, Montreal

Let us send you full particulars on the safe, effective way of reconditioning superheater units — the Elesco unit remanufacturing service.

Superheaters - Feed Water Heaters - Exhaust Steam Injectors - Superheated Steam Pyrometers - American Throttles

Supply Trade

Eddie Phillips has joined the **Tyson Roller Bearing Corporation,** Massillon, Ohio, as field sales engineer in charge of mine car anti-friction bearing applications; his territory is in the southern West Virginia field.

A. C. Streamer, manager of sales of diversified products of the **Westinghouse Electric & Manufacturing Company,** East Pittsburgh, Pa., also has been appointed manager of transportation, with headquarters at 20 North Wacker drive, Chicago.

Robert P. Lamont, former Secretary of Commerce in President Hoover's Cabinet, has resigned as president of the **American Iron & Steel Institute,** which position he had held since his retirement from the Cabinet in August, 1932. Prior to his service as Secretary of Commerce, Mr. Lamont had been president of the American Steel Foundries.

Grant B. Shipley has resigned as president of the **Wood Preserving Corporation,** the **Century Wood Preserving Company,** the **National Lumber & Creosoting Company** and the **Carolina Wood Preserving Company** and has been elected chairman of the board of directors of the **Wood Preserving Corporation.** He has been succeeded as president of the wood preserving companies by **Arthur W. Armstrong,** now executive vice-president of these companies and also president of the Ayer & Lord Tie Company, Chicago.

Mr. Shipley was born in Coulterville, Cal., on April 27, 1880. From 1898 to 1901 he was a machinist apprentice in a general repair shop and from the latter date until 1905 he was employed as a draftsman, machine designer and chief draftsman on marine equipment, mining machinery and gold and silver milling machinery and plants. During three years of this period he was also an instructor of marine design and mechanical drawing at the Humboldt Evening Polytechnical school at San Francisco. In 1905 he entered the employ of the Allis-Chalmers Manufacturing Company, Milwaukee, Wis., and during the next six years was chief draftsman and later chief engineer in charge of drawing, designing and constructing mining and timber preserving plants. From 1911 to 1933 he has been associated as an executive and operating officer, with various tie, coal and timber treating companies and has also been a practicing, designing and consulting engineer for timber treating and other plants. After leaving the employ of Allis-Chalmers, he organized the Pittsburgh Wood Preserving Company, occupying the position of president. In 1922 he became associated also with the American Nickel Corporation, which later became the American Mond Nickel Company with Mr. Shipley as president. When the American Mond Nickel Company was taken over by the International Nickel Company of Canada in 1929, he was elected a director and a member of the Executive committee of the latter company. In 1923 he organized the Century Wood Preserving Company. Following the formation in October, 1930, of the Wood Preserving Corporation, Pittsburgh, Pa., to consoli-

Grant B. Shipley

date and co-ordinate the 22 timber treating plants of the Ayer & Lord Tie Company, Chicago, the National Lumber & Creosoting Company, Texarkana, Tex., and the Century Wood Preserving Company, Pittsburgh, Mr. Shipley became president of these companies.

Mr. Armstrong was born in Evanston, Ill., on April 9, 1885, and was graduated from Northwestern University in 1907. In 1903 he worked in the freight department of the Chicago & North Western, and in 1904 entered the employ of the Ayer & Lord Tie Company in the general offices. In 1905 he returned to school; upon graduation in 1907 he was appointed superintendent of the Ayer & Lord treating plant at Grenada, Miss., and until 1915 occupied various positions in the operating department of this company. In the latter year, he was appointed secretary and treasurer, which position he held until 1925, when he was appointed general manager. In 1927 he was elected president and general manager, which position he

Arthur W. Armstrong

continues to hold. He has long been active in association work, at present being chairman of the Special Committee on the Processing of Wood of the American Wood Preservers' Association.

Emmett K. Conneely, formerly vice-president of the Standard Steel Car Company, with headquarters at Chicago, has been appointed manager of railroad sales of the **Republic Steel Corporation,** with headquarters at Youngstown, Ohio. Mr. Conneely served in various capacities with the Pittsburgh & Lake Erie during his early business life, joining the Standard Steel Car Company during the war. He was later connected with the New York Air Brake Company as vice-president and became vice-president of the Pullman Company at New York upon that company's acquisition of the Standard Steel Car Company. He was subsequently made vice-president of the Standard Steel Car Company at Chicago, which position he held until March, 1933.

OBITUARY

James A. Campbell, chairman emeritus of the Youngstown Sheet & Tube Company and a prominent figure in the steel industry for more than 40 years, died suddenly of a heart attack at his home in Youngstown, Ohio, on September 20, at the age of 79. Mr. Campbell was one of the incorporators of the company and was its president from 1906 to 1930 and then to 1931 chairman of the board.

Construction

ATCHISON, TOPEKA & SANTA FE.—A contract has been awarded to the Sharpe & Fellows Construction Company, Los Angeles, Cal., for the construction of a line from Carlsbad, N. M., northeastward 20 miles to a potash mine of the Potash Company of America. The line will be of light construction with 90-lb. second-hand rail, 3,240 creosoted ties to the mile, and dirt ballast. Construction will be commenced immediately.

BURLINGTON, MUSCATINE & NORTHWESTERN.—Examiner C. P. Howard of the Interstate Commerce Commission has recommended in a proposed report that Division 4 of the commission find that public convenience and necessity are not shown to require the construction, rehabilitation and operation by this company of a line between Muscatine, Ia., and Burlington, 49.94 miles, including trackage rights. The company proposed to operate part of the line abandoned by the Muscatine, Burlington & Southern and to construct 18.44 miles between Muscatine and Fruitland.

CHESAPEAKE & OHIO.—This company has let contracts to rehabilitate the elevators in two of its warehouses at Norfolk, Va., at a cost of $40,000. J. L. Abbitt, Norfolk, has the general contract and the Salem Foundry & Machine Works, Inc., Salem, Va., the contract for elevators.

CHICAGO, ROCK ISLAND & PACIFIC-NEW YORK CENTRAL.—A contract has been awarded to the Ellington-Miller Company, Chicago, for the reconstruction of the train shed at the LaSalle Street

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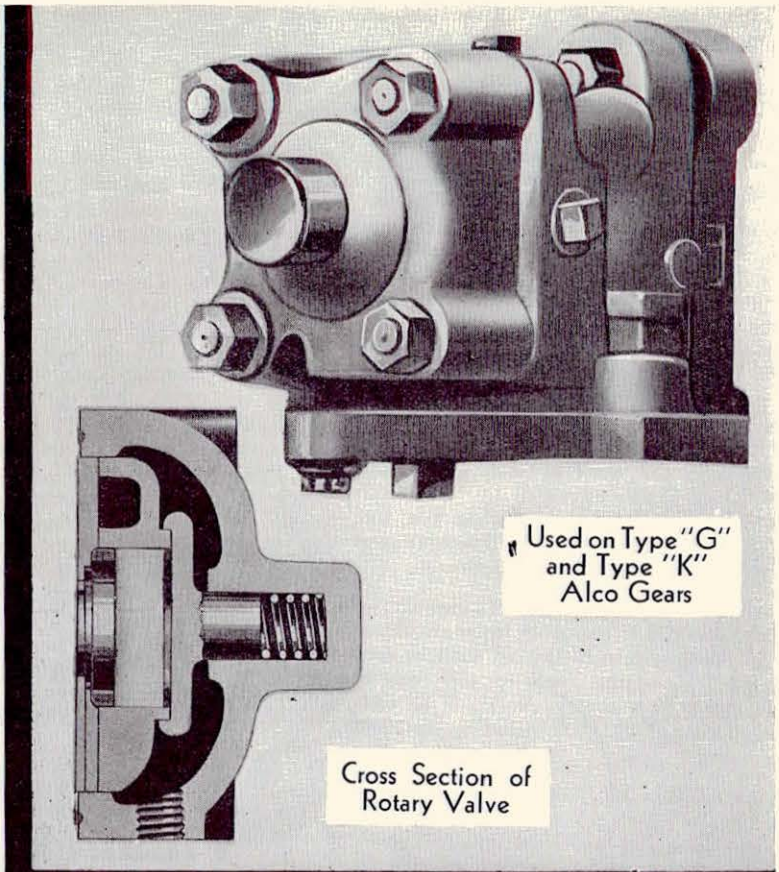
Alco REVERSE GEAR FACTS



Used on Type "G" and Type "K" Alco Gears

Cross Section of Rotary Valve

THE ROTARY VALVE

The Heart of the Gear

is a distinctive feature which gives ALCO Reverse Gears many important operating advantages.

EFFICIENCY. This packless flat rotary valve has long demonstrated its efficiency and reliability in air-brake operation.

SENSITIVITY. It is easy to operate and very sensitive to slight movements of the reverse lever or piston.

ACCURACY. The valve seats properly at all times, eliminating faulty action of the gear through the valve lifting.

SIMPLICITY. This type of valve eliminates the troublesome stuffing box on the valve stem. The valve body has brass bushings to permit the taking up of excess lost motion.

ECONOMY. The entire valve may be easily and quickly removed for grinding or repairs without disturbing or removing the gear. The same valve is used on both the type "K" and type "G" ALCO Gears.

American Locomotive Company
30 Church Street New York N.Y.

Station of these companies at Chicago. The new structure, which will consist of truss spans carried on steel columns with a flat roof of precast reinforced concrete slabs, will extend over 11 tracks and have a length of 578 ft. The total estimated cost of this project is $290,000.

DELAWARE, LACKAWANNA & WESTERN.—The New York Public Service Commission has approved the bid submitted by the Bates & Rogers Construction Co., Staten Island, N. Y., for the elimination of the Bridge street crossing on this road in the town of Vestal, Broome county, N. Y. This company offered to do the work for $85,891, which was the lowest of 15 bids received. The Commission directed that the railroad let the contract and begin the work as soon as possible. A bid of $3,836 submitted by the American Bridge Company covering the furnishing and delivering of structural steel for this crossing was also approved.

ERIE.—The New York Public Service Commission has issued an order providing that Southwestern boulevard shall be constructed above the grade of this road in Hamburg, Erie county, N. Y., at an estimated cost of $123,000 including land and damages.

ERIE-DELAWARE, LACKAWANNA & WESTERN.—The New York Public Service Commission has approved detailed plans, specifications and an estimate of cost of $69,038 for the elimination of the Prospect avenue crossing of these railroads in Binghamton, N. Y.

NEW YORK CENTRAL.—The New York Public Service Commission has approved plans and an estimate of cost of $180,000 for the elimination of the Eddy and Borden crossings of this road in the towns of Canton and DeKalb in St. Lawrence county, N. Y. The Commission also amended its order in relation to the method of eliminating the West River road crossing in the town of Chile, Monroe county, N. Y.

PENNSYLVANIA.—Work was started August 23, by the Pennsylvania on the complete reconstruction of the timber trestle approach to its Ohio Connecting Bridge at Woods Run, Pa. station. This bridge structure across the Ohio river joins the Eastern and Pan Handle divisions of the railroad and carries a heavy volume of freight traffic in and out of the Pittsburgh district. The present wooden trestle approach, built 30 years ago, will be completely removed and a new two-track roadway constructed on concrete piers and steel deck girders. Approximately 1,000 feet of timber trestle work will be replaced by concrete and steel. It is estimated that the entire project will cost $170,000 and will be completed late this year. Work already done on the Woods Run approach trestle has involved the completion of 13 concrete piers and the digging of foundations for several others. Construction will now go forward actively on nine additional piers and the accompanying deck girders. The concrete cribbing at the west end will remain as the final unit of the job to be completed. The Ohio Connecting Bridge with its approaches is an important link in the Pennsylvania's through route between Pittsburgh and the West, its use eliminating the necessity of handling a considerable volume of freight traffic through the central city district. In replacing the timber approach to the bridge with concrete and steel, the railroad not only is strengthening the trestle to withstand the strains imposed by modern traffic but it also is materially lessening maintenance costs. The work, which involves the reconstruction of the approach and not the bridge itself, is being done by the railroad's divisional forces and the steel used is being taken from stocks on hand.

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS.—The St. Louis (Mo.) Board of Public Service will receive bids at an early date for the construction of the deck and track connection of the East St. Louis Union Station, the South Valley Junction and the St. Louis Union Depot railroad aproaches to the St. Louis Municipal bridge across the Mississippi river between St. Louis and East St. Louis, Ill. A loan of $700,000 to be used in financing this work was recently granted to the city by the Reconstruction Finance Corporation.

Financial

ATCHISON, TOPEKA & SANTA FE.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon a branch line between Seward, Okla., and Cashion, 10.61 miles.

BALTIMORE & OHIO.—*Bonds.*—George M. Shriver, senior vice-president of this company, has announced that, as a result of improved business conditions, the company is in a position to provide for full payment of the $5,000,000 of Cleveland, Lorain & Wheeling first consolidated bonds maturing October 1, 1933, and that accordingly it will be unnecessary to carry out the plan for refunding these bonds, published last July.

CHICAGO & EASTERN ILLINOIS.—*Trustee Appointed.*—Charles M. Thomson, former judge of the appellate court at Chicago, was appointed trustee for the Chicago & Eastern Illinois on September 14 by Federal Judge John P. Barnes, the action being taken under the new federal bankruptcy law. Mr. Thomson, whose appointment was made upon motion of counsel for the Reconstruction Finance Corporation, to which the railroad owes more than $5,000,000 secured by $8,000,000 worth of prior lien bonds, will exercise powers in the management and operation of the railroad. Judge Barnes, in instructing the counsel for the Reconstruction Finance Corporation, the bondholders and the railroad to draw up a formal order vesting in Mr. Thomson the requisite authority in accordance with the federal bankruptcy law, outlined the principal grounds for the appointment of a trustee as follows: (1) That the equity of the stockholders of the debtor (the railroad) in this property is small; (2) that it will be advantageous to have a trustee who can at the proper time prepare and present a plan of reorganization; and (3) that a very substantial part of both preferred and common stock of the debtor is owned or controlled by persons and corporations who own or control other railroads, that the management of the debtor owes its existence to such persons and corporations who own or control other railroads, that there are subsisting contracts and that there are in effect joint rates between the debtor and other railroads which should have the scrutiny of a trustee who, because of a single allegiance, can look at such contracts and rates with an eye only to the good of the debtor.

In commenting upon these issues, the judge said "The court is not impressed with either or both of the first two grounds for the appointment of a trustee. Neither constitutes a ground and together, they do not constitute grounds for the appointment of a trustee. The third ground assigned deserves and has the serious consideration of the court. It may be that the contract and joint rates of the debtor with other railroads are the best from the view point of the debtor that can be negotiated or established, but since it is not denied that substantial parts of the stocks of the debtor are owned or controlled by persons and corporations who own and control other railroads, the creditors and other stockholders of the debtor are entitled to have those contracts and joint rates scrutinized by an impartial person who does not owe his office to the votes of the owners of other railroads."

The statement of the judge refers to arguments presented by counsel for the Reconstruction Finance Corporation to the effect that the Van Sweringen interests virtually controlled the Chicago & Eastern Illinois.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Abandonment and Trackage Rights.*—The Interstate Commerce Commission has authorized this company to abandon its line extending from Oconto Junction, Wisc., to Oconto, 10 miles, and to operate under trackage rights over the Chicago & North Western between Stiles Junction and Oconto, 8 miles. The company has also been authorized to construct a track connecting its line with the C. & N. W. at Oconto. It is estimated that the connecting track will cost $2,200, whereas maintenance expenses of $6,000 a year will be saved and salvage of $9,000 realized by abandoning the Milwaukee line where it parallels the C. & N. W. The rental to be paid the latter company is $3,000 per annum, plus 50 cents for each train mile operated over 6,000 in any year. The Milwaukee will pay the cost of installing a train order signal at Stiles Junction and of a train dispatcher's wire in the joint station at this point, plus 50 cents for each locomotive turned on the C. & N. W. wye at Oconto.

Abandonment.—The commission has also authorized this company to abandon a branch line extending from Dexterville Junction, Wisc., to Linsey, 15.7 miles, the

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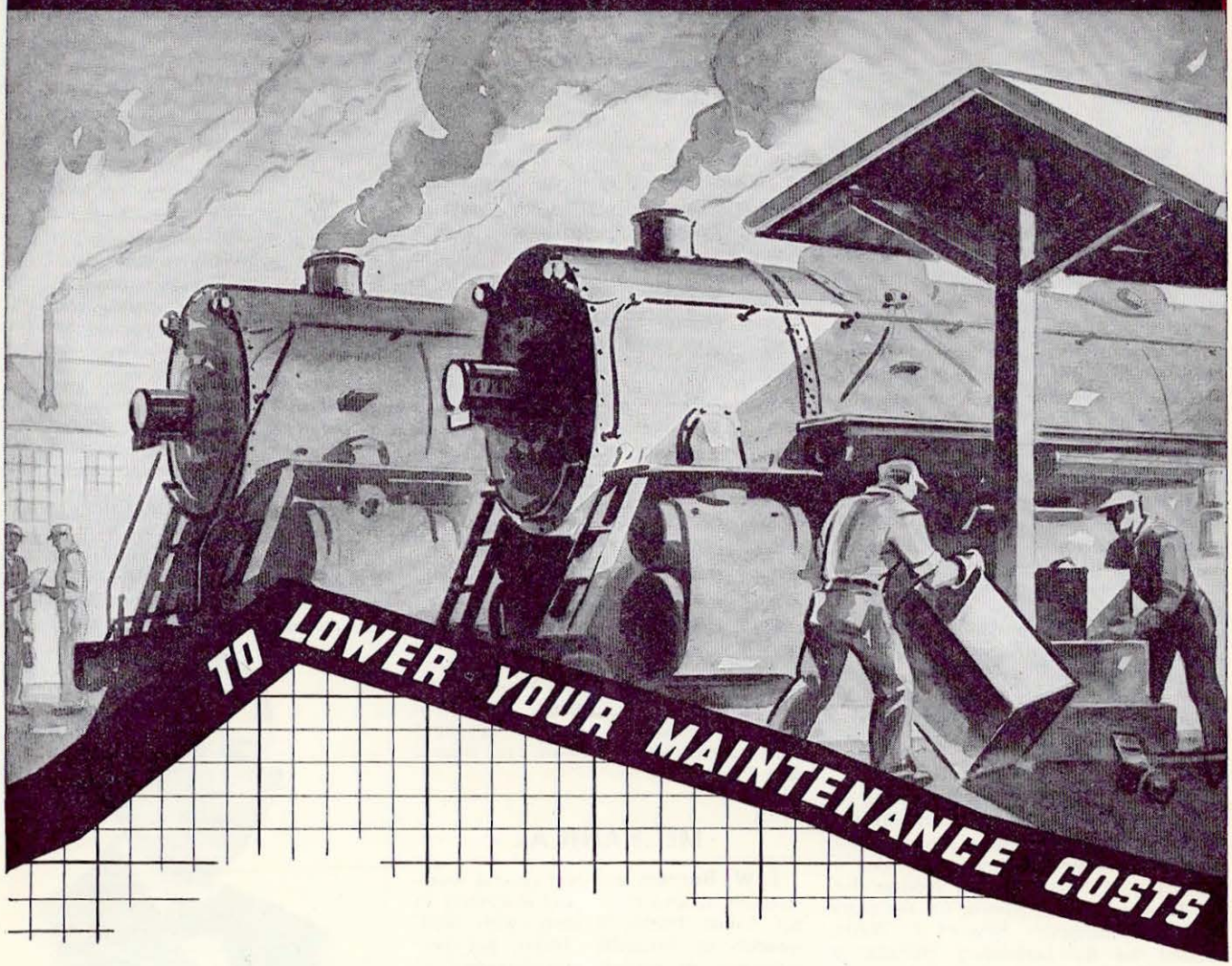
NEW MATERIALS ARE READY



If a part failed a few years ago it was replaced with similar material—there was no alternative. » » » But today, thanks to the strides made by metallurgy, the mechanical department has vastly improved materials available for repairs. » » » Consider firebox sheets. Here, in addition to carbon steel there is Toncan Iron, special nickel alloy steels and Enduro, the perfected stainless steel to meet any kind of special condition. » » » Alloy steel staybolts have been developed with greater strength and toughness plus increased resistance to corrosion. Forging steels that are unaffected by low temperatures are reducing rod and axle failures. » » » If a part fails, don't replace it with the same material without looking into the possibilities of alloy steels and irons developed by Republic to give increased life and safety.

Toncan Iron Boiler Tubes, Pipe, Plates, Culverts, Rivets, Staybolts, Tender Plates and Firebox Sheets • Sheets and Strip for special railroad purposes • Agathon Alloy Steels for Locomotive Parts • Agathon Engine Bolt Steel • Agathon Iron for pins and bushings • Agathon Staybolt Iron • Climax Steel Staybolts • Upson Bolts and Nuts • Track Material, Maney Guard Rail Assemblies • Enduro Stainless Steel for dining car equipment, for refrigeration cars and for firebox sheets • Agathon Nickel Forging Steel.

The Birdsboro Steel Foundry & Machine Company of Birdsboro, Pa. has manufactured and is prepared to supply under license, Toncan Copper Molybdenum Iron castings for locomotives.

CENTRAL ALLOY DIVISION, MASSILLON, OHIO

AGATHON STEELS

REPUBLIC STEEL CORPORATION

GENERAL OFFICES YOUNGSTOWN, OHIO

TONCAN COPPER MOLYBDENUM IRON

necessity for this action arising from loss of traffic to motor transport agencies.

ELBERTON & EASTERN. — *Abandonment.* —This company has applied to the Interstate Commerce Commission for authority to abandon its line from Elberton Junction, Ga., to Washington, 34.62 miles.

MERIDIAN & BIGBEE RIVER.—*R. F. C. Loan.*—W. E. Hopkins, trustee, has applied to the Reconstruction Finance Corporation for a loan of $750,000 to take the place of the $600,000 loan approved by the Interstate Commerce Commission and authorized by the R. F. C. to enable the company to complete the construction of an extension from Cromwell, Ala., to Myrtlewood. The application states that because of increased prices and wages, the effect of the N. R. A. and other influences, the construction will cost at least $61,000 more than was estimated, and additional amounts are desired for taxes, maintenance, purchase of rail and expenses of the trusteeship.

MISSOURI PACIFIC.—*Provision For Back Income Taxes Asked.*—Guy T. Helvering, commissioner of internal revenue, has asked the Interstate Commerce Commission to withhold approval of any plan of reorganization for this company which does not adequately provide for the payment of $5,423,485 of back income taxes which he said are owed to the government by the Missouri Pacific and subsidiary and affiliated companies for several years back. He also asked to be advised whenever any reorganization plan is filed.

MISSOURI PACIFIC.—*Receivership.*—L. W. Baldwin, former president of the Missouri Pacific and now trustee under the federal court litigation, has filed a claim for $45,000 in fees as receiver for the Missouri Pacific System for the years 1923-1928, inclusive. Edward J. White, counsel for the bankruptcy trustees, is asking $72,000 for fees as counsel for the old receivership from 1917-1933 at the rate of $4,500 a year. Mr. White's application states that the old receivership did not end when the company was reorganized in 1917.

ST. LOUIS-SAN FRANCISCO. — *Trustee Sought.*—Federal Judge Charles B. Faris of St. Louis has, under advisement, the application of the Reconstruction Finance Corporation for the appointment of trustees to operate the railroad, now in receivership.

SOUTHERN PACIFIC. — *Abandonment.* — This company and the Arizona Eastern have applied to the Interstate Commerce Commission for authority to abandon a branch line between Amster, Ariz., and Amster Junction, 4.35 miles.

Average Prices of Stocks and of Bonds

	Sept. 19	Last week	Last year
Average price of 20 representative railway stocks..	46.41	47.58	27.40
Average price of 20 representative railway bonds..	69.20	71.51	64.13

Dividends Declared

Mahoning Coal R. R.—Common, $6.25, quarterly, payable November 1 to holders of record October 16.

Railway Officers

OPERATING

P. W. Sullivan, superintendent of the Monongahela division, of the Pennsylvania, with headquarters at Pittsburgh, Pa., has been appointed to the newly-created position of assistant to the general manager with the same headquarters. **W. R. Triem,** superintendent of freight transportation, at Pittsburgh, has been appointed superintendent of the Monongahela division to succeed Mr. Sullivan. **E. E. Ernest,** superintendent of passenger transportation at Pittsburgh, has been appointed superintendent of freight transportation with the same headquarters, succeeding Mr. Triem. **W. W. Patchell,** division engineer of the Philadelphia Terminal division, at Philadelphia, Pa., has been promoted to superintendent of passenger transportation at Pittsburgh to replace Mr. Ernest.

TRAFFIC

J. W. Cloud, dairy agent for the Erie at St. Louis, Mo., has been appointed western dairy agent, with headquarters at Chicago, to succeed **E. V. McHugh,** deceased. **E. W. Keiley,** commercial agent at Peoria, Ill., has been appointed dairy agent at St. Louis, to succeed Mr. Cloud.

MECHANICAL

J. W. Burnett, assistant general superintendent motive power and machinery of the Union Pacific System, with headquarters at Pocatello, Idaho, has been promoted to general superintendent of motive power and machinery with headquarters at Omaha, Nebr., to succeed **J. W. Highleyman,** who has retired in accordance with the pension system of this company. **E. J. Cole,** assistant general superintendent motive power and machinery, at Omaha, has been appointed assistant general superintendent motive power and machinery in charge of the locomotive department, with the same headquarters. **Otto Jabelmann,** superintendent of shops at Omaha, has been appointed assistant general superintendent motive power and machinery in charge of the car department, with the same headquarters. **John Gogerty,** master mechanic of the Wyoming division, at Cheyenne, Wyo., has been appointed superintendent of shops at Omaha to succeed Mr. Jabelmann. **Joseph D. Kilian** has been appointed master mechanic of the Wyoming division to succeed Mr. Gogerty.

PURCHASES AND STORES

S. A. Hayden, chief clerk to the general storekeeper of the Missouri-Kansas-Texas, has been promoted to general storekeeper, with headquarters at Parsons, Kan., to succeed **C. L. Wright.**

OBITUARY

Thomas M. Callahan, general agent for the Missouri Pacific at St. Louis, Mo., died at the Missouri Pacific hospital in that city on September 10.

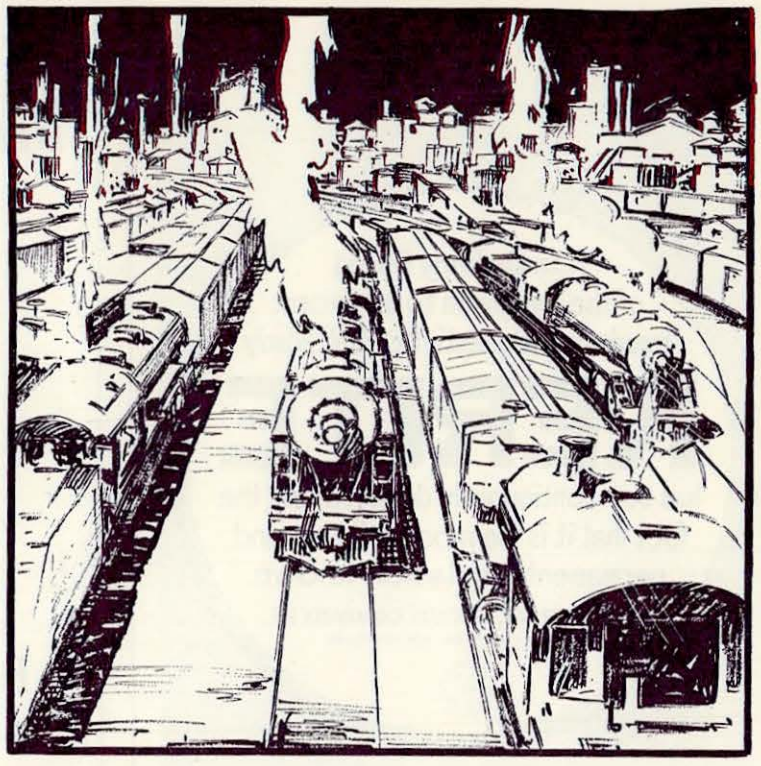
William Nichols, chairman of the board of train rule examiners of the Southern Pacific, died at Eugene, Ore., on August 20, at the age of 67. Mr. Nichols entered railroad service on the Kansas City, Fort Scott & Memphis as operator and agent in 1881. He had served as train dispatcher on the Union Pacific, the Santa Fe and other roads. He was appointed chairman of the board of examiners on the Southern Pacific in October, 1907. He was author of books on train rules and train dispatching, and had been a contributor to the *Railway Age* and other papers.

Walter Shipley, chief traffic officer of the Mobile & Ohio, with headquarters at St. Louis, Mo., died on September 6 at St. Louis. Mr. Shipley was born on January 6, 1872, at Piqua, Ohio, and entered railway service at the age of 17 years as a clerk in the general freight office of the Texas & Pacific at Dallas, Tex. Subsequently Mr. Shipley served as a clerk in the local freight office at Shreveport, La., and in the auditor's office and general

Walter Shipley

freight office at Paris, Tex. In 1901 he went with the Texas & Pacific as traveling freight agent at Ft. Worth, Tex., being transferred to Louisville, Ky., in 1903. Six years later Mr. Shipley entered the service of the Southern as commercial agent at Houston, Tex., being transferred to Dallas in the following year. In 1911 he was appointed district freight agent at New Orleans, La., and three years later he was made division freight agent at Macon, Ga. Mr. Shipley was advanced to general freight agent at Charlotte, N. C., in January, 1917, and in August of the same year he entered the service of the American Railway Association as general agent at Charleston, S. C. In 1918, he returned to the Southern as general agent at Memphis, Tenn., leaving this company at the end of two years to become general traffic manager of the Mobile & Ohio at St. Louis. Mr. Shipley held this position until his appointment as chief traffic officer in 1932.

Greater EARNING POWER



NET operating incomes will always be under the influence of the qualities built into locomotive wearing parts.

Resistance to wear, shock and stresses is a vital factor which not only determines the cost of maintenance, but also the serviceability of locomotives and the number of units required for operation.

Wearing parts made of HUNT-SPILLER *Air Furnace* GUN IRON contain those wear-resisting properties which insure maximum efficiency, dependable operation and lower fuel consumption as well as increased mileage between renewals.

Locomotive earning power increases with the number of engines equipped with Hunt-Spiller parts—complete standardization on the parts listed below offers every road a greater net operating income.

HSGI
Reg. U. S. Trade Mark

Cylinder Bushings
Cylinder Packing Rings
Pistons or Piston Bull Rings
Valve Bushings
Valve Packing Rings
Valve Bull Rings
Crosshead Shoes
Hub Liners
Shoes and Wedges
Floating Rod Bushings

Parts Finished For Application

Dunbar Sectional Type Packing
Duplex Sectional Type Packing for Cylinders and Valves
(Duplex Springs for Above Sectional Packing)
Cylinder Snap Rings
Valve Rings All Shapes

HUNT-SPILLER MFG. CORPORATION
J. G. Platt, Pres. & Gen. Mgr. V. W. Ellet, Vice-President.

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383 Dorchester Ave. South Boston, 27, Mass.

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HUNT-SPILLER GUN IRON

Air Furnace

From the Early Period
of the Telegraph to the present
remarkable development in the field of Electricity

KERITE

has been continuously demonstrating the fact that it is the most reliable and permanent insulation known

THE KERITE INSULATED WIRE & CABLE COMPANY INC
NEW YORK CHICAGO SAN FRANCISCO

MAGNUS COMPANY

(INCORPORATED)

Journal Bearings

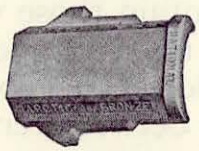
AND

Bronze Engine Castings

New York Chicago

"Arctic" #36 BRONZE
CAR JOURNAL BEARINGS

LONG WEAR



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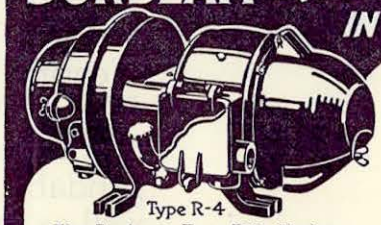
NATIONAL BEARING METALS CORP.
ST. LOUIS, MO.

New York, N. Y. Jersey City, N. J.
Pittsburgh, Pa. Meadville, Pa.
Portsmouth, Va St. Paul, Minn
2

SUNBEAM EQUIPMENT FOR SAFETY IN TRAIN CONTROL



Type R-4

The Sunbeam Four-Pole Turbo-Generator has a wave-wound armature and four brushes that insure freedom from voltage ripple. A responsive governor maintains constant speed and voltage

SUNBEAM Train Control Turbo-Generators operate at constant speed, insuring close voltage regulation. Designed especially to meet the critical demands of train control, they effect great economy in steam and maintenance costs. Their performance in actual use demonstrates their reliability over long periods of service. Write for further details.

SUNBEAM ELECTRIC MFG. CO.
NEW YORK SAN FRANCISCO PHILADELPHIA
EVANSVILLE, INDIANA, U. S. A.
DENVER RICHMOND INDIANAPOLIS

VAPOR Products

STEAM COUPLERS ARA Standard
VAPOR SYSTEM Thermostatic Control
FLEXIBLE CONDUITS in place of Steam Hose
CONTROLS for Air Conditioning

VAPOR SYSTEM

VAPOR CAR HEATING CO., Inc.
RAILWAY EXCHANGE, CHICAGO

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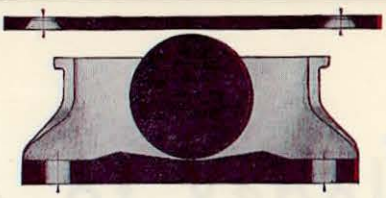
"DIAMOND-S"
BRAKE SHOES
—cost less per mile than other brake shoes
THE AMERICAN BRAKE SHOE & FOUNDRY CO.
230 Park Avenue, New York 332 So. Michigan Ave., Chicago



STUCKI SIDE BEARINGS
Manufactured by
A. Stucki Co.
Oliver Bldg., Pittsburgh, Pa.
Canadian Representative:
The Holden Co., Ltd.,
Montreal, Can.

BARBER LATERAL - MOTION DEVICE
1,300,000 cars equipped
ROLLER SIDE-BEARINGS
STANDARD CAR TRUCK CO.
McCORMICK BUILDING CHICAGO

Pittsburgh Spring & Steel Co.
1417 Farmers Bank Building, Pittsburgh, Pa.
Makers of Elliptic and Spiral SPRINGS of Every Description
Carbon, Vanadium, Silico-Manganese Steels.
Licensed manufacturers under patents for Symington Coil-Elliptic groupings.
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WINE RAILWAY APPLIANCE CO.
TOLEDO, OHIO
Details of our products appear in following issues of Railway Age during 1932
January 16—March 19—May 21—August 13—September 17—November 19—or Railway Mechanical Engineer.

EDGEWATER STEEL COMPANY
PITTSBURGH, PA.
Details of our products appeared in the following issues of Railway Age during 1931, 1932 & 1933:
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1932—Jan. 2—March 5—April 2—May 7—June 18, 25—Sept. 3.
1933—Feb'y 4, 25—March 4—April 1—May 6—June 3, 24—July 1, 22.

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Non-Display "Employment" Ads five cents a word. Count address in figuring cost. Box number requires ten words. All other classified Ads $4.00 an inch (1" x 1⅝") an insertion. Payable in Advance. Railway Age, 30 Church St., New York, N. Y.

Your classified advertisement should appear in this section.

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SALARIED POSITIONS $2,500 to $25,000—This thoroughly organized advertising service of 23 years' recognized standing and reputation carries on preliminary negotiations for positions of the caliber indicated, through a procedure individualized to each client's personal requirements. Several weeks are required to negotiate and each individual must finance the moderate cost of his own campaign. Retaining fee protected by a refund provision as stipulated in our agreement. Identity is covered and, if employed, present position protected. If you have actually earned over $2,500, send only name and address for details.

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EDUCATIONAL

THE Railway Educational Bureau, Omaha, Neb., offers a distinctive education service for Supervisors and other employes. Write for FREE Special Bulletin.

If you are looking for a man or in need of a position, your advertisement should appear in the Get Together Department

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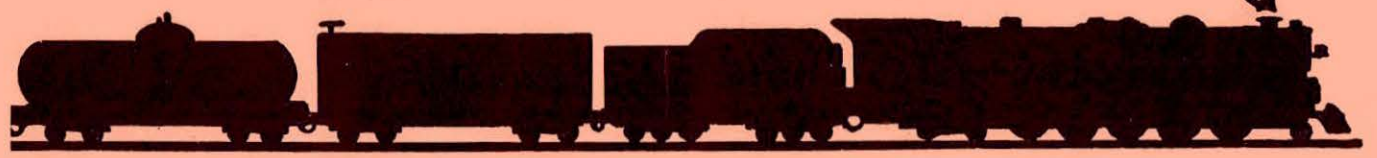
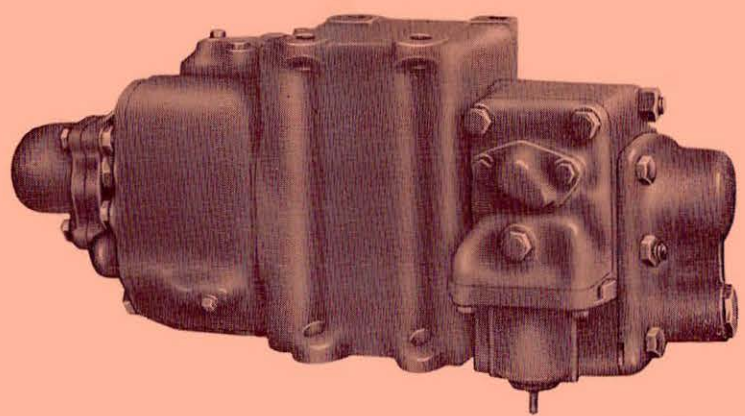
A "NEW DEAL" for Freight Train Operation-





The "AB" BRAKE EQUIPMENT

THE transportation world is on the threshold of a new and revolutionary era that is bound to hasten the return of the railroads to their former place in American life.

More effective brakes for modern freight trains are needed to assure greater economy of operation. The new "AB" Brake has been proved by extended test and service to possess those features that conform to the operating "code" for present-day conditions.

Ease of installation — fast and certain service action — positive and reliable release — quick and powerful emergency action, always obtainable — long life and low maintenance cost — these are the outstanding characteristics of the "AB" Equipment that provide a "new deal" for freight transportation.

See our exhibit of 60 years progress at the Century of Progress Exposition in Chicago. Booths O and P, Group 19, mezzanine floor. Travel and Transport Building.

WESTINGHOUSE AIR BRAKE CO.

General Office and Works, Wilmerding, Penna.

(1248)

MODERN RAILWAY SIGNAL INSTALLATIONS ARE SELF-LIQUIDATING PROJECTS

CONSOLIDATION OF INTERLOCKING PLANTS

"Consolidation of interlockings is recommended as an economic means to be considered for reducing operating expenses and avoiding the expense of duplicate buildings."

The foregoing is the conclusion of the A. R. A. Signal Section Committee V, as set forth in its report to the Annual Meeting of the Signal Section in May.*

✠ ✠ ✠

To consolidate interlockings is to equip one interlocking station so that it may do the work of two or more existing interlocking plants. Such consolidation does away with duplication of effort, equipment and buildings, thereby reducing operating expenses and providing greater facility of operation as train movements formerly directed from two or three control points can be directed from one control point.

Consolidation of Interlocking Plants as Self-Liquidating Projects

	Case A	*Case B*
No. of plants before consolidation	2	3
No. of plants after consolidation	1	1
Trains per day, average	480	95
ANNUAL RETURN ON INVESTMENT		
over and above 6% interest charges	49%	34%

*See ARA SS Proceedings, May 1933, pp. 135-136

UNION SWITCH & SIGNAL COMPANY
Swissvale, Pennsylvania

GENERAL RAILWAY SIGNAL COMPANY
Rochester, N. Y.

94a

Signals Aid Modern Motive Power to Produce More Ton-Miles Per Train-Hour